

ABOUT

American Vegetable Grower

MAY • 1957

Antibiotics—for
Disease Control

How to Recognize
Nematode Damage

Processed Potatoes

Chemical Weed
Control

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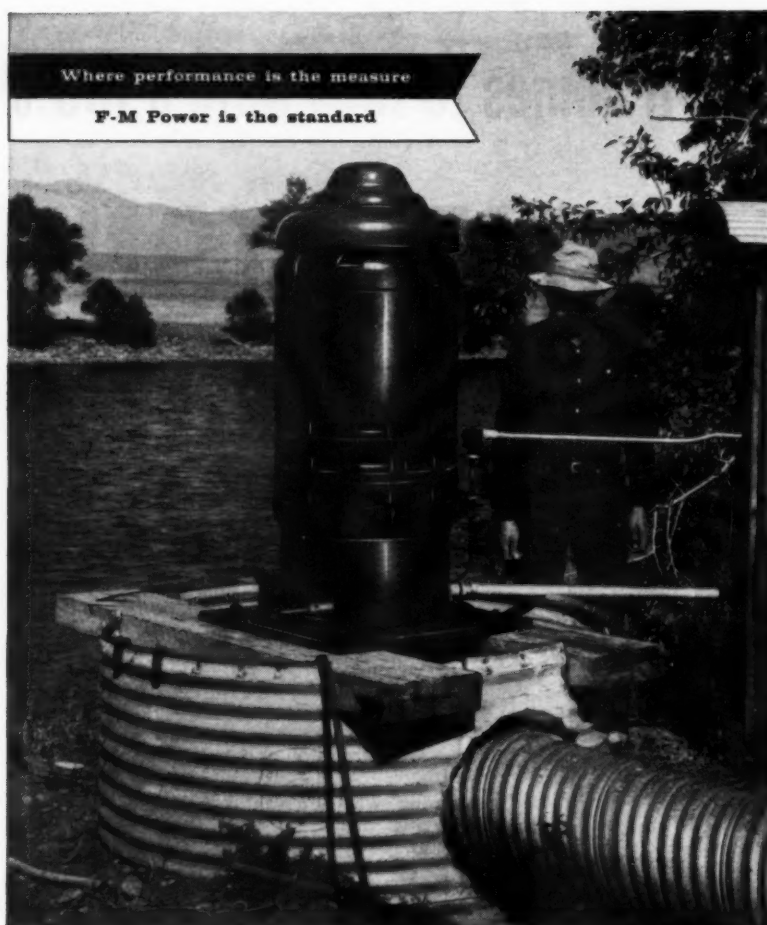
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MAY, 1957

3



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AMERICAN VEGETABLE GROWER

REG. U. S. PAT. OFF.
(Commercial Vegetable Grower)

Vol. 5 May, 1957 No. 5

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Cover photo courtesy Associated Seed Growers, Inc.

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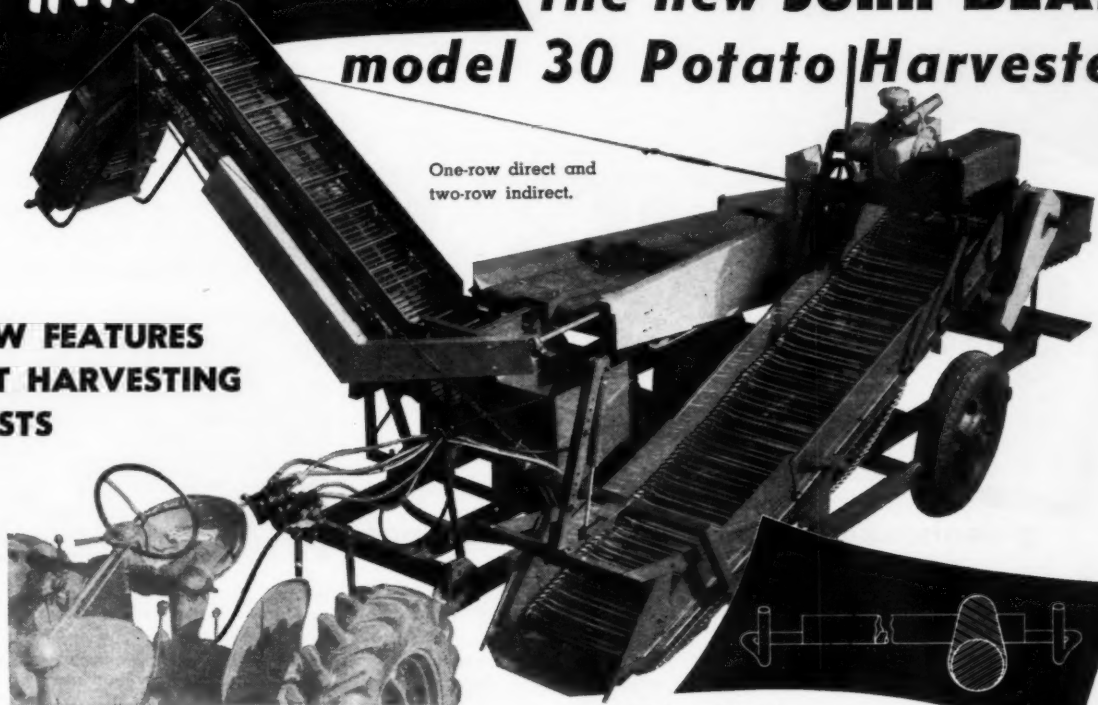
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One-row direct and two-row indirect.

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New rubber-cushioned link rod with cross section view.

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MODEL 60 PROVIDES FAST, BIG CAPACITY HARVESTING

This improved two-row direct or indirect harvester is equipped with a powerful 30 hp Wisconsin VH-4 air cooled engine with starter, generator, and built-in hydraulic pump to operate hydraulic controls for digger blade depth and bulk loader height. Hydraulically controlled rear wheel steering and tandem rear axle for increased flotation in soft soil are available at extra cost.

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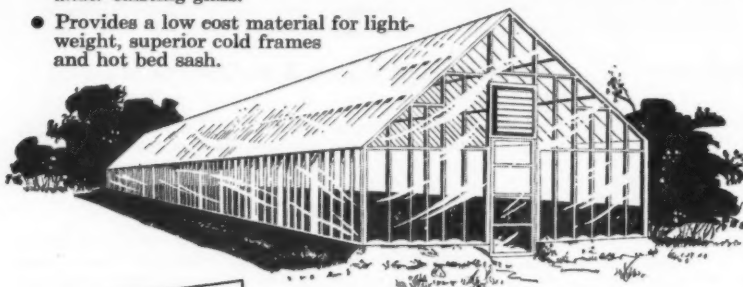
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LETTERS TO THE EDITOR

Truck Farm From Swamp

Dear Editor:

We try to grow all the vegetables that are usually grown in a home garden. We have $4\frac{1}{2}$ acres of sandy soil where we grow early vegetables, asparagus, melons, raspberries, and strawberries, and 3 acres of peat marsh where the smaller vegetables are planted.

AMERICAN VEGETABLE GROWER is wonderful and helpful in our enterprise.

Sturgis, Mich. Clarence & Edith Fritz
Klinger Lake Truck Farm



Courtesy Sturgis Daily Journal

Clarence and Edith Fritz with some of the produce grown on their Klinger Lake Truck Farm.

The Fritz truck farm was developed in a period of 10 years from a swamp into one of the most productive and fertile acreages in the area. Clarence drained and cleared the land, built three small ponds, installed an irrigation system, and built a sales room in their garage. Edith handles the retail sales of their produce which supplies a large section of St. Joseph County with fresh, home-grown fruits and vegetables.—Ed.

Frost Control for Celery

Dear Editor:

I am a celery grower and we use tent paper for frost protection. I would like information on the latest scientific methods of frost control.

Kalamazoo, Mich.

Chris Wenke

Reader Wenke will find a full report on the latest practices in our April issue.—Ed.

Help in Training Students

Dear Editor:

After reading the letter about the college students' judging contest (Feb., 1957, pg. 6), I would like to say that L. F. Martin's point is well taken. As an adult advisor for National Junior Vegetable Growers Association I'd like to suggest that he attend one of the NJVGA judging and identification contests. At the Atlanta, Ga., convention, the National Canners Association, Washington, D. C., made movies of all the interesting events during the NJVGA convention. Write Dr. Charles H. Mahoney if you want to run the film.

Also Prof. Leonard A. Yager, extension, Montana State College, Bozeman, Mont., has spent a good deal of time making slides of the various items used in training students to identify and judge vegetables.

William R. Laechelt

AMERICAN VEGETABLE GROWER

Swamp

the vegetables that home garden. We soil where we grow us, melons, rasp- s, and 3 acres of smaller vegetables

GROWER is won- enterprise. nce & Edith Fritz Lake Truck Farm



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Chris Wenke

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Yager, extension, Bozeman, Mont., ime making slides i in training stu- re vegetables. liam R. Laechelt

VEGETABLE GROWER



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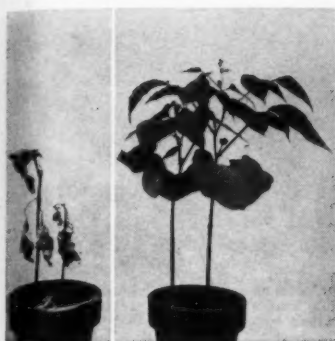
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Two bean diseases controlled by antibiotics. Upper left photo — Control of bean anthracnose; plant at left was untreated; plant at right was sprayed with Oligomycin. Above — Control of downy mildew of lima beans; the plants at left were treated with streptomycin; those at right received no treatment.

What About ANTIBIOTICS

Do antibiotics have a place in control of vegetable diseases? And are they practical from a cost standpoint?

By **W. J. ZAUMEYER**
U.S. Department of Agriculture

RESearch during the past few years has shown the effectiveness of antibiotics in the control of certain plant diseases.

Antibiotics are actually complex organic chemicals which countless soil-inhabiting microorganisms have been manufacturing for millions of years. Little is known about their action except that they destroy certain disease-producing organisms or inhibit their growth. One of their features is that they are absorbed by the plant rather than remaining on the surface as most fungicides do.

Tests of many antibiotics by plant pathologists have uncovered only a few that are useful as plant pathogen inhibitors. Streptomycin is the most effective of these in controlling vegetable diseases.

On the market are four commercial formulations of streptomycin.* Originally thought to be solely antibac-

terial in their action, they have recently been found to be effective against a few fungus diseases in the downy mildew group.

Among the bacterial diseases of vegetables controlled by streptomycin compounds are bacterial spot of tomato and pepper, halo blight of bean, seed-piece decay and black leg of potato, angular leaf spot of cucumber, and bacterial blight of celery.

The fungus diseases that have been controlled are downy mildew of lima bean and cucumber and late blight of tomato.

Recent research evaluation of six new antibiotics for control of fungus diseases of beans and lima beans has shown them all to be promising and thus worth more intensive study.

Greenhouse experiments at the USDA Plant Industry Station, Beltsville, Md., have shown that each of the six — Anisomycin, Mycostatin, Oligomycin, Griseofulvin, Filipin, and F-17 — used as sprays, protected snap and lima beans from one or more of the six fungus diseases against which they were tested. They are not being used commercially yet.

Griseofulvin is produced by a species of *Penicillium* related to the organism from which penicillin is obtained. The other five antibiotics, including the culture filtrate F-17, are produced by species of *Streptomyces*, the genus of mold that produces streptomycin.

Oligomycin, isolated by University of Wisconsin scientists, was the most effective. It protected beans from rust, anthracnose, and angular leaf spot, and lima beans from downy mildew and stem anthracnose when used at 100 ppm. This concentration is equivalent to about 1 1/3 ounces of the active antibiotic dissolved in 100 gallons of water.

In laboratory tests at the Wisconsin Agricultural Experiment Station, 19 plant disease-producing organisms proved sensitive to Oligomycin. In greenhouse tests there, this antibiotic was added to soil in which alfalfa seed was planted and later was applied to the seedlings in water. The antibiotic gave complete protection against *Pythium*, a fungus which causes damping-off of seedlings. This genus, the cause of damping-off of many kinds of vegetable seedlings, is considered one of the most destructive group of plant pathogens, and *Pythium*-induced damping-off is generally not controlled by the best methods known today.

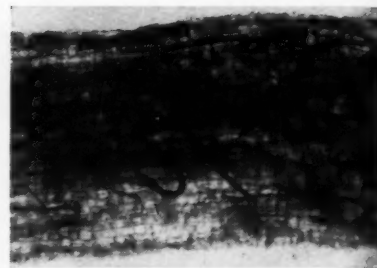
The discoverers of Griseofulvin found that a large number of fungi

(Continued on page 31)

* Agri-mycin 100, manufactured by Chas. Pfizer & Co., Inc., 630 Flushing Ave., Brooklyn 6, N.Y.; Agristrop, by Merck & Co., Rahway, N.J.; Phyto-mycin, by E. R. Squibb & Sons Div., Olin Mathieson Chemical Corp., 745 Fifth Ave., New York 22, N.Y., and Acco Streptomycin, by American Cyanamid Co., Agric. Chemicals Div., 30 Rockefeller Plaza, New York 20, N.Y.



Females of golden nematode of potato; white ones are young, dark ones are older and are changing into cysts containing eggs and larvae; these cysts live for many years in soil.



Example of how nematodes live inside a root, eventually causing decay and death. This type of nematode cannot be seen with the naked eye.

How • When • Where NEMATODES ATTACK

How can you tell if nematodes are damaging your crops? Here are some ways to recognize their presence in your soil

By G. STEINER

U. S. Department of Agriculture

NOW that growers are becoming more aware of the fact that nematodes or eelworms may cause unthriftiness, decline, and not infrequently failure of their crops, the question is often raised as to how they may recognize the presence and kinds of these pests in their plantings. Unfortunately, this is not an easy or simple matter.

First, nematodes that attack plants are so small that with few exceptions they cannot be seen with the naked eye. Moreover, they are of complex structure and therefore difficult to distinguish. In addition, hundreds of different kinds are found wherever plants grow. Certain ones are harmless or of little significance for the final crop yield; while others are serious pests that significantly reduce production. Finally, most of the noxious forms do not produce specific, readily recognizable and reliable symptoms on the attacked plants.

It is not easy even for specialists and other informed persons to establish the presence and kinds of nematode pests in plantings without recourse to a microscope and other special tools and working methods.

The following directions, therefore, must not be understood as means to establish presence and kinds of nematode pests with finality, but rather to guide the grower in assembling the necessary evidence to submit the problem to his experiment station or any other informed agency or person.

The first step for the grower will be to examine his plantings (seed-beds, garden plots, fields) for areas of decline, unthriftiness, lack of vigor, or lack of proper response to fertilizers; for areas of thin stands, of stunting and dwarfing; for areas where germination of seeds is unsatisfactory; where there is a tend-



Symptoms produced on white potato by bulb or stem nematodes: tubers show sunken portions; skin, often cracked, has dark grayish discolorations; tissues are changed into powdery mass.



Root-knot nematodes caused swellings on beet.

ency to wilt (particularly over any hot period of the day); where the lower leaves of individual plants tend to become discolored, dry up and drop prematurely; where a pale, dull green contrasts the deep luxuriant color of healthy plants, or where there is outright chlorosis; or, in general, where growth and yield in spite of proper care are unsatisfactory for some unknown reason.

AMERICAN VEGETABLE GROWER

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Florida celery planting attacked by sting nematodes. Note areas of thin stands, stunted plants.

The aforementioned are field symptoms that may indicate the presence of noxious nematodes in such numbers that damage becomes noticeable. Any grower knows, however, that these very same symptoms may also result from factors and agents other than nematodes, such as lack of certain minerals (trace elements), improper soil pH, unfavorable soil structure, too much or too little moisture, abnormal temperature, other disease agents (fungi, bacteria, viruses),

or other pests (insects, mites, millepedes).

The grower must therefore make a careful analysis and evaluation of these various factors and agents that may be involved in causing the decline conditions he is confronted with. He should particularly review the performance of the trouble areas over the past years.

Nematode-induced damage tends to show up at the same location year after year, usually spreading as time



Corn root showing signs of heavy attack by various nematode pests.

MAY, 1957



Two celery plants of same eye: one at left has roots stunted by sting nematodes; one at right was grown in soil free of nematodes.

progresses. This will be particularly evident if the same crop is planted every year or in close succession. Furthermore, nematode infestations generally do not appear suddenly or with marked virulence; they most frequently develop slowly but steadily, and are stable in their reappearance year after year. Commonly they do not fluctuate in being very virulent one year and then disappear the next

one. They often spread as a circle, from a center that represents the original infestation, or along rows in the direction that a field is worked or that the water flows.

It should be apparent that from field symptoms one can establish only the *probable* presence of nematode pests. For more positive evidence one must proceed to an examination of individual declining plants. Where



Carrot with bearded roots and knots caused principally by root-knot nematode infestation.

must one look for nematodes on such a plant? The entire plant must be examined! In the case of vegetables, those nematodes that are found on roots and other underground parts are known to cause the greatest and most serious damage; it should not be forgotten, however, that certain types of these pests also invade crowns, shoots, petioles, leaves, flowers, and even seeds.

Onions and garlic in some areas of the United States suffer damage from the group known as bulb or stem nematodes. They produce rather specific symptoms, such as twisting, crinkling, and abnormal curving of stems, petioles and leaves, often combined with irregular thickenings or blister-like swellings of spongy texture; frequently the young shoots are swollen, stunted and bunched, petioles shortened, and leaves dwarfed.

Bulb or stem nematodes are also pests of root crops. By invading the tissues of tubers and other underground parts of potatoes, sweetpotatoes, carrots, turnips, rutabagas, rhubarb, etc., they induce the formation of lesions that later crack and

(Continued on page 32)



Staby

Insect- and disease-free potato foliage—obtainable today with the new pesticides.

20 Years of POTATO SPRAYING

Here are up-to-date recommendations for potato insect and disease control based on over 20 years' experience

By J. D. WILSON and J. P. SLEESMAN

Ohio Agricultural Experiment Station

EXPERIMENTS on the control of potato diseases and insects have been carried on every summer in Ohio from 1924 until the present, a total of 33 years. The authors began their work about 1935. It has been during these last two decades that a mild revolution in pesticide development has taken place.

Significant changes occurred when the dithiocarbamates entered the field about 1940. In the first experiment in which the dithiocarbamate, ferbam, was used, it gave the top

yield of potatoes, but it never did so well again. Ferbam was soon followed by zinc dimethyl dithiocarbamate, which now has the common name of ziram (trade name, Zerlate). It has given excellent results on potatoes (and even more so on tomatoes) whenever late blight did not appear in the field being sprayed.

Within a year or two it was replaced by another organic fungicide (zinc ethylene bis dithiocarbamate) which now bears the common name of zineb. This third dithiocar-

bamate is best known by the trade names of Parzate and Dithane Z-78.

The parent chemical of this compound was first used experimentally in the form of sodium dimethyl dithiocarbamate, which has the common name of nabam. It did not give consistently outstanding results on potatoes, and a research worker, in attempting to improve its performance, added zinc sulfate. This formed the zinc compound mentioned above and led to the commercial production of the wettable powder formulations known as Dithane Z-78 and Parzate.

In the interest of economy, many growers prefer to buy nabam (Dithane D-14 and/or liquid Parzate) and zinc sulfate and then, after dissolving the latter in water, add it to the nabam in the spray tank to form zineb. In a series of 25 field experiments in Ohio the average increase in yield over the untreated checks has been identical for the two types of formulation, and the control of defoliation by early and late blights has been as nearly equal as two such comparisons could be. Consistently good performance has established zineb as an outstanding favorite, with the result that today it is used to spray at least 80% of Ohio's commercial acreage.

In 1946 another variation of this group of fungicides manganese ethylene bis dithiocarbamate, later to be known as maneb (Manzate and Dithane M-22), entered the field. Ten years of testing demonstrated that, whereas this compound is an excellent fungicide, it has failed by an average of 5 bushels per acre to do as well as zineb. It should be noted that the reverse is true on tomatoes, where the ability of maneb to control anthracnose fruit rot has made it a definite favorite.

Captan has more recently challenged zineb as a potato fungicide, but because of somewhat higher cost and failure to consistently match zineb in performance, it has been used so far to treat only a comparatively small percentage of the Ohio potato acreage.

In 1944 we became concerned with the introduction of DDT and its rapid rise as an outstanding insecticide, particularly for use on potatoes. The widespread use of DDT has been responsible for the greatest increase in potato production. It gives virtually 100% control of leafhoppers, an insect that had previously been very difficult to control. Just how important leafhoppers are is demonstrated by the fact that getting rid of the last 10% of the population, which copper compounds such as Bordeaux mixture and the

(Continued on page 30)

AMERICAN VEGETABLE GROWER

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TABLE GROWER



A modern row crop air sprayer in operation.

ROW CROP AIR SPRAYING

**Air sprayers will soon be as standard
in vegetable fields as they now are
in fruit orchards**

By **PAUL F. YOUNG**
John Bean Division

DURING the relatively short time that it has been in general use, row crop air spraying has been an outstanding success. In answer to the question asked many times during the past several seasons, row crop air spraying is here to stay.

Research and development of the pioneer air sprayer for orchards, introduced to commercial fruit growers in 1941, has done much to speed the acceptance of row crop air sprayers. In other words, the commercial vegetable grower has profited by the problems—or perhaps it would be better to say the solutions to the problems—that engineers of orchard and shade tree air equipment had to solve.

Before discussing the many advantages of air spraying, it is well to define it. In connection with row crop spraying, it is the application of spray material to such crops as vegetables with an air-type, tractor-drawn sprayer. It employs a stream of air as the means of carrying liquid chemicals to the plant as compared to conventional boom-equipped hydraulic sprayers which utilize the power of liquid pressure to project

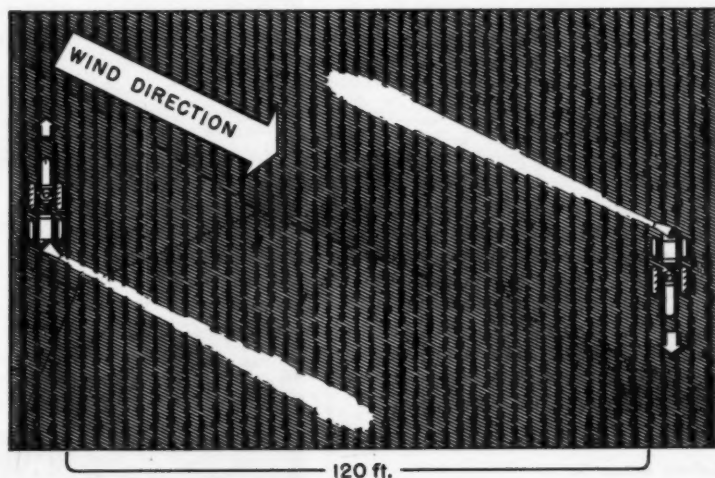
the chemicals into areas where they are desired.

In the air-type spraying, a large volume of air at a medium velocity carries the spray-laden air to the plant in the form of a fine spray or mist. Perhaps one of the biggest advantages that air spraying offers over the old hydraulic method is that

spray chemicals can be applied as either dilute spray material, as with a boom, or as so-called reduced gallonage or concentrate spraying.

Concentrate spraying, which is being used more and more now with the advent of air spraying, is simply using the same amount of chemical per acre but with only a fraction of the water used in a dilute spray formula. The degree of concentration is usually 2, 3, or 4 times

(Continued on page 34)

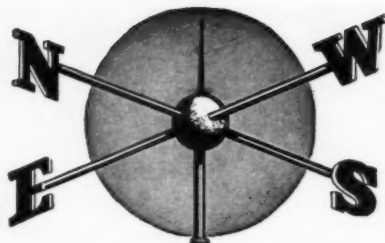


Rotating the discharge head of the air sprayer allows the grower to take advantage of wind conditions. On the trip through the field with the wind, the head is rotated and stopped so that discharge is directly into the wind. On trip in the opposite direction against the wind, the discharge is aimed in the same direction that the wind is blowing.

MAY, 1957

13

STATE



NEWS

- Western New York Growers Warming Up to Cooled Lettuce
- Florida's Vine-Ripened Tomatoes Interest Growers in Other Areas

Jet-Cooling Lettuce

NEW YORK—A group of western New York lettuce growers gathered recently at the Genesee Valley Regional Market to hear the story of vacuum cooling of lettuce from the men who are building the machine to do the job, C. A. Ferguson and James Condon of Eastern HiVac Coolers Co.

Experiments with a portable vacuum jet cooler last summer on the Kelly and Santore muck lands at Oswego showed that lettuce with field temperatures of 70 to 100° could be cooled to 34.7° in 31 minutes with chilling from the center outward. When packed in boxes that are moisture resistant the lettuce retains all its quality.

The portable machine processed 70,000 cases of lettuce in 22 days and the finished

product may be stored up to 10 days without deteriorating effect, according to Ferguson.

Festive Tomatoes

GEORGIA—A tomato festival is being planned in Tifton for June 12-15, when the tomato season is in full swing. Complete with street dance, parade, beauty contest,

See page 27 for
State News Special Report

and of course tomato judging contest, the affair is to emphasize Tift County's importance as a tomato growing area and marketing center. Smartly packaged tomatoes will be given to guests and tourists and mailed to prominent people all over the nation. Each box will tell the history of the tomato industry in the area and describe the theme of the festival.

Vine-Ripened Tomatoes

Moultrie county marketing agent Rice Campbell, after returning from a tour of vine-ripened tomato operations in Florida, announced that if enough growers wish a vine-ripened tomato marketing plan, such a plan will be set up this year in Moultrie. Some 40 growers are needed to plant from one to two acres of staked tomatoes in order to establish a vine-ripened operation. About a dozen interested growers also made the tour.—Mrs. Pauline T. Stephens.

Contract Troubles

CALIFORNIA—The California canning contract negotiations between growers and processors is near a deadlock and is causing apprehension concerning the future of the 1957 crop.

Buyers report that canners have bought practically all the tomatoes they need for (Continued on page 26)

THIRD GRAND TOUR OF EUROPE

The Vegetable Growers Association of America is sponsoring its third annual tour of Europe under the direction of Walter Pretzer, proprietor of Ruetenik Gardens, Cleveland, Ohio, and a past president of the VGAA.

The tour will leave New York on August 16 and arrive back in the U. S. on September 30.

The itinerary includes visits to England, Holland, Germany, Austria, Switzerland, Italy, and France. The group will travel by private de luxe bus while visiting select farms, principal wholesale markets, and such institutes of experimental research as the world renowned John Innes Horticultural Institution and the Rothamsted Experimental Station in England.

For those interested in horticultural activities this tour promises to be a perfect combination of business and pleasure. An added incentive for those in the trade: Total expense of the trip is deductible from your income tax.

Further information may be secured from Walter Pretzer, Vegetable Growers Association of America Tour, 1903 E. Ninth St., Cleveland 14, Ohio.

product may be stored up to 10 days without deteriorating effect, according to Ferguson.

The cooling principle is triggered as steam is sent into the retorts through a complex array of jets, removing just about all the air and using the moisture on the lettuce to bring down the temperature. About 35 gallons of water are used each minute the machine is in operation through evaporation as the main stream is cooled for re-entry to the machine.—G. E. Toles.

Seal of Quality

INDIANA—The 1957 legislature ended their session with the passing of an "Indiana Seal of Quality" standardization law that will enable producers of agricultural products to attach a statewide seal of quality to produce that meets the required standards. Administration of the act is under the supervision of the director of the agricultural experiment station.—F. C. Gaylord, Sec'y, Lafayette.

Celery Research

MICHIGAN—Research is the key word in Michigan's 1957 celery promotion program. Directors of the Michigan Celery Promotion Association have voted to em-

Sugar baby

Only one of nearly 60 beautiful Watermelon Varieties we breed and grow as America's largest Vineseed producers! Are YOU profiting by using our Specialized Strains?

INSIST ON **ROBINSEEDS** FROM YOUR SUPPLIER

Lawrence Robinson & Sons
MODESTO, CALIFORNIA

SPECIALIST VINESEED BREEDERS
CANTALOUPE • CUCUMBER • PUMPKIN • SQUASH • WATERMELON

NEWS

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FROM YOUR SUPPLIER

Robinson & Sons
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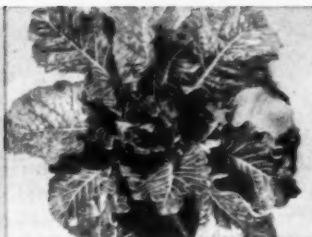
VEGETABLE GROWER



IT'S TOO LATE FOR TOP PROFITS



Yellow areas between dark green veins, starting with lower, older leaves, are magnesium-deficiency signs in this tomato plant.



This magnesium-deficient cabbage plant probably will not produce a marketable head, because it's too late. "YLT" has gone too far.



It's too late for profits—for this cauliflower plant, with its curling, blotchy, mottled and discolored leaves.



Magnesium-starved bean leaves show characteristic yellowing, mottling and browning of older, lower leaves.

"YLT" (YELLOW LEAF TROUBLE) means reduced vegetable yields. When you see yellowing between the veins of the older leaves of your vegetable plants, it's a sign of *magnesium deficiency*. But — when such an obvious symptom appears, it's too late for top profits.

Most vegetable soils lack enough magnesium, the element so basic in the growing of healthy, early-maturing vegetables. That's why more and more successful growers apply recommended amounts of premium-type complete vegetable fertilizer containing SPM (Sul-Po-Mag®). Sul-Po-Mag is fast-acting, readily available, and water-soluble. It's the most effective source of available magnesium — and sulphate of potash — for your vegetables. Most fertilizer manufacturers make grades containing "SPM." See your fertilizer dealer.



Look for this identifying Seal of Approval when you buy. It's your assurance of extra-value fertilizer.

SPM Premium-type fertilizers guarantee

Sul-Po-Mag® 

Water-Soluble Double Sulphate of Potash-Magnesia
(K₂SO₄ • 2MgSO₄) 22% K₂O — 18% MgO

potash division

INTERNATIONAL MINERALS & CHEMICAL CORPORATION
20 NORTH WACKER DRIVE • CHICAGO, ILLINOIS



End-cost is real cost!

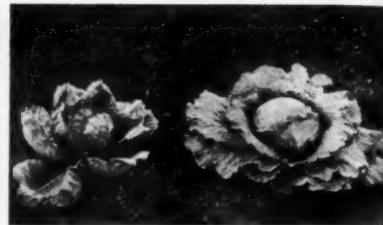
It's not the cost of the bag alone that determines the cost of the package. Because of less down-time, faster filling, quality film produces packages at the lowest end-cost. Particularly when the film is VISQUEEN 'q' film—the remarkably clear polyethylene. Write for detailed information and names of converters serving your area.

How **VISQUEEN** film T.M. pays off better

Strength of VISQUEEN film eliminates breakage. There's no ink rub-off with VISQUEEN treated film. The uniformity of VISQUEEN film means excellent machinability. Stiffness and body of VISQUEEN film facilitate fabricating. The experience behind VISQUEEN film assures superior quality. The superior quality of VISQUEEN film cuts packaging cost.

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Aphid-infested cabbage (left) and uninfested cabbage. Systemics have given good control of cabbage aphids in field trials, and demeton is currently included in recommendations for aphid control on cole crops in several states.

SYSTEMIC INSECTICIDES

They're becoming more important in control of vegetable insects

By F. L. McEWEN

New York Agricultural Experiment Station

SYSTEMIC insecticides have many desirable features for use in vegetable production. It is expected that further research and experimentation will make these materials more important in vegetable insect control.

During the past 10 years synthetic insecticides have provided the vegetable grower with cheap and effective insect control. However, inherent in the use of such materials as DDT and parathion are the repeated applications necessary to protect new growth on rapidly expanding plants and the high costs of labor and equipment for making such applications.

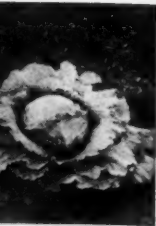
Fewer Applications

The concept of a systemic insecticide is most attractive to growers, because ideally such a material would require a minimum of applications and would be transported within the plant to new foliage as well as protecting that present when the treatment was originally applied. In addition, good spray coverage would not be so critical, and good insect control would be possible using less expensive equipment applying only a few gallons of liquid per acre.

It had been known for many years that some plants growing in soil containing toxicants, notably selenium, take up sufficient of this material to render their foliage poisonous to insects and mites, but it was not until recent years that insecticide manufacturers produced materials showing promise for such use. A number of named insecticides currently in use or under experimentation throughout the United States are transported within the growing plant to a greater or lesser extent. The list of those

(Continued on page 18)

AMERICAN VEGETABLE GROWER



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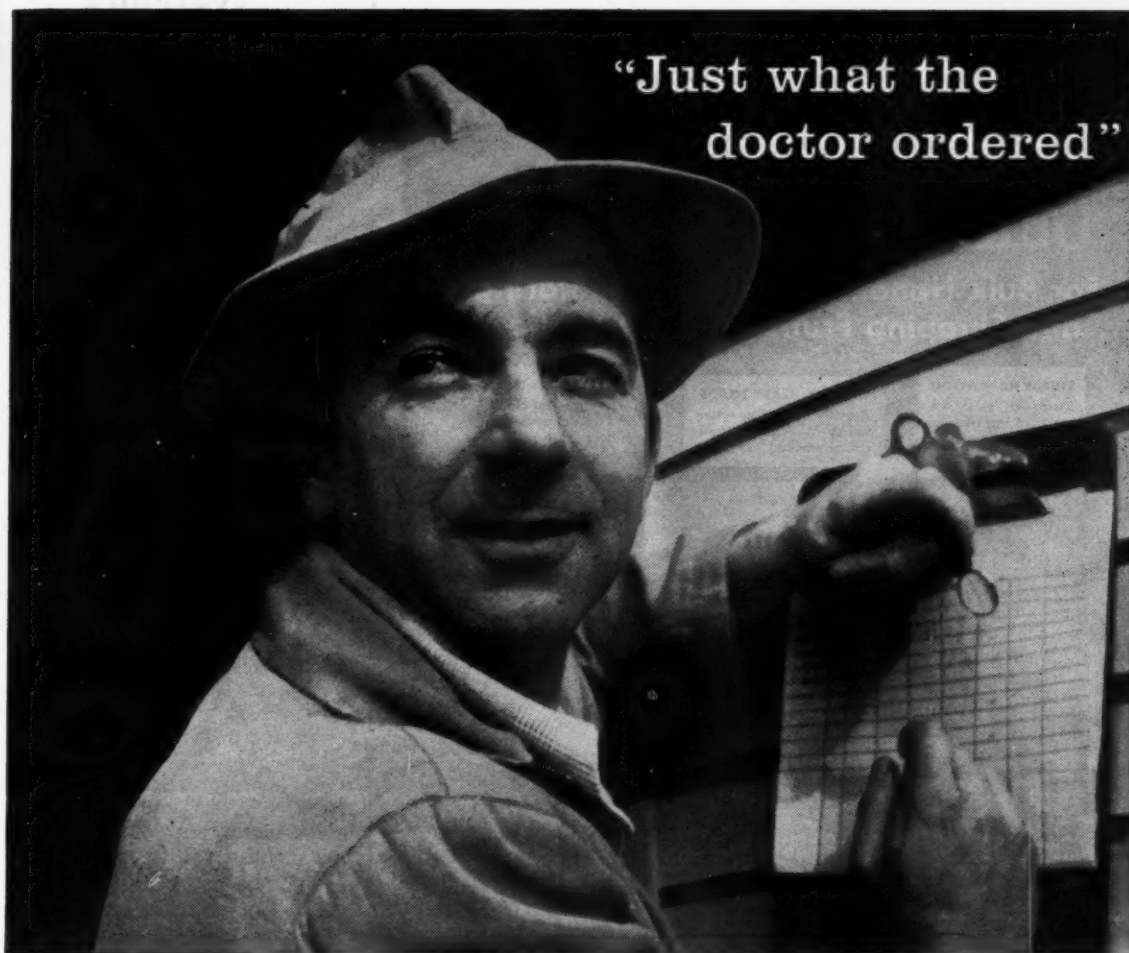
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ITABLE GROWER



"Just what the
doctor ordered"



Follow the ORTHO program and be a happier grower with a healthier crop. Call the doctor—your ORTHO Fieldman! He's scientifically educated and ORTHO trained. He can diagnose your trouble. And he can correct it by prescribing from the *number one* line of agricultural chemicals in America today. It's true: ORTHO has more than 400 agricultural formulations unmatched by anyone, anywhere in this world. So, call your ORTHO Fieldman to get all this background, laboratory and field research, manufacturing skills and exacting quality controls. It's "just what the doctor ordered" to give you bigger yields of better quality. Call your ORTHO Fieldman—for profits' sake!

An ORTHO program always pays more than it costs!



California Spray-Chemical Corp., • Executive Offices: Richmond, Calif.; Washington, D. C. • District Offices: Haddonfield, N. J.; Medina, N. Y.; Columbia, S. C.; Orlando, Fla.; Shreveport, La.; Maryland Heights, Mo.; Memphis, Tenn.; Maumee, Ohio; Portland, Ore.; Sacramento, Fresno, San Jose, Whittier, Calif.; Phoenix, Ariz.; Caldwell, Ida.; Springfield, Mass.
On all chemicals, read directions and cautions before use.

THERE'S A VEGETABLE PEST CONTROL PROGRAM "TAILOR-MADE" FOR YOU

Your nearest Calspray sales office has a special vegetable pest and disease control program "tailor-made" for your crops.

This program is recommended by a qualified ORTHO Fieldman, experienced in the problems of your area.

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**Growers, Processors, Pre-Packers
Save Labor, Money—Improve Quality**

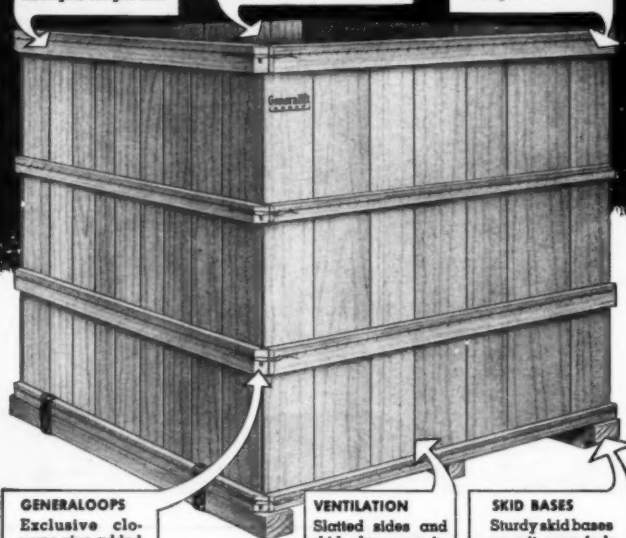
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**For Bulk Handling, Harvesting, Storing
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STURDY HARDWOOD
Rugged resawn
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give greater
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HANDLES HEAVY LOADS
Readily handles ton
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can be stacked four high.

EXTERIOR CLEATS
Leaves interior clear
and free of bruising
projections—adds to
strength.



GENERALLOOPS
Exclusive clo-
sures give added
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Slotted sides and
skid clearance in
stacks gives ideal
ventilation through
bulk loads.

SKID BASES
Sturdy skid bases
permit easy fork
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entry. Simplifies
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Generalift® pallet boxes are designed to save labor, time and money . . . help improve quality in the bulk handling of agricultural products. They're built to withstand the rigors of exposure, rough use, heavy loads and high stacking in storage.

They are widely used to harvest, handle, store and ship bulk loads of literally every fruit and vegetable with impressive records of service and savings. Initial investments are quickly recovered through pallet box economies.

Available in several standard types and sizes to fit every agricultural need.



LONG-LIFE, LOW-MAINTENANCE PICKING BOXES

Rugged wirebound construction and tough resawn hardwoods combine to make the sturdiest picking boxes available. Cut maintenance costs, get more service from your picking boxes. Available in 1 bushel and 1 1/4 bushel sizes. Stack securely, nest in storage.

518

General Box

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1855 Miner Street
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SYSTEMICS

(Continued from page 16)

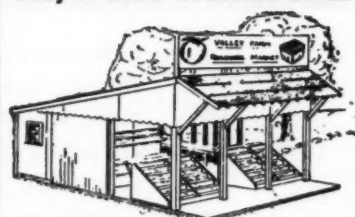
systemically transported in insecti-
cidally effective quantity, however,
contains only four—schradan, deme-
ton, phosdrin, and thimet.*

Schradan and demeton have been
available for several years, and their
effectiveness for aphid, mite, and leaf-
hopper control on various vegetable
crops is well established. Demeton is
currently included in recommenda-
tions for aphid control on cole crops
and control of sucking insects on po-
tatoes in several states. However,
when used at recommended dosage,
neither demeton nor schradan is
effective against insects other than
sucking types.

Phosdrin is a comparative new-
comer and is toxic to many chewing
insects as well as the sucking species.
Its toxicity to chewing insects is prob-
ably due to surface residue, since
effectiveness against such species is
rapidly lost, usually within 30 hours.
Effectiveness against aphids, how-
ever, persists for several days due to
translocation of the insect toxicant
within the growing plant.

Like phosdrin, thimet is also of
recent appearance and is not so selec-
tive as schradan and demeton in the
insects it controls. With thimet, how-
ever, contact with a spray residue is

Easy-to-Build Roadside Stand



This roadside market, conveniently located
so the motorist can readily stop, will make it
easy for you to take care of customers
quickly. Movable racks make it possible to
maintain an attractive stand in accordance
with supply and demand. Overhanging roof
affords protection for the customer.

Working drawings sent postpaid on
receipt of \$1.50

AMERICAN VEGETABLE GROWER
Willoughby, Ohio

not necessary for control of either
chewing or sucking insects, and sus-
ceptible species of both types are
killed by feeding on foliage of treated
plants. This broader spectrum of in-
sect control exhibited by phosdrin and
thimet is most desirable, since many
of our vegetable crops are simultane-
ously infested by both chewing and
sucking insects. **THE END.**

* Systemic insecticides are manufactured by the
following companies: schradan, Dow Chemical
Co.; Monsanto Chemical Co.; demeton, Chemagro
Corp.; phosdrin, Shell Chemical Co.; and thimet,
American Cyanamid Co.

AMERICAN VEGETABLE GROWER

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GETABLE GROWER



All insecticides should be handled safely ... malathion makes it easy

Ever wear a respirator
on a hot July afternoon?
It's a "must" when loading
or applying most
phosphate insecticides —
but not malathion.
Here's why it's "one of the
safest insecticides
to handle" (USDA)

Though malathion kills 82 insects
on 47 crops, it is *low* in toxicity
to man and animals. To handle it
safely, follow the same simple
precautions required for DDT.
Respirators, special protective
clothing are *not* required.

Avoid residue problems—Mala-
thion's low toxicity to man has
given it a *high* residue tolerance.
Residues also disappear rapidly.

That's why you can spray most
crops as close as 72 hours from
harvest *without residue prob-
lems.* It's the ideal way to control
buildups of aphids and other
pests close to harvest.

FREE Grower's Guide—Write
American Cyanamid Company,
Nitrogen and Allied Products
Div., Dept. V2, 30 Rockefeller
Plaza, New York 20, New York.



Aphid



Mite



Leafhopper



Mexican
Bean Beetle



Thrips


Malathion stops them all ... plus 77 other insects attacking 47 crops!

MALATHION

insecticides have many uses on every kind of farm

CYANAMID

fmc
Stericooler
HYDROCOOLER



**FOR IMPROVED
HYDROCOOLING OF:**

SWEET CORN — CARROTS
CELERY — ASPARAGUS — BEANS
RADISHES — PEAS — CAULIFLOWER
SPINACH — LETTUCE
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PEACHES — APRICOTS
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The 1957 Hydrocooling Unit ...Proved and Improved over 15 years!

Today, hydrocooling is the recognized method of increasing the saleable life of fruits and produce from grower to market. In this field of hydrocooling, the FMC Stericooler stands as the undisputed leader. An FMC Stericooler installed in your plant is on the job constantly to retard decay — cut trimming losses — protect produce from transit decay — deliver produce garden fresh and fruits tree ripened. Get the new 1957 FMC Stericooler hydrocooler! Compact metal construction... increased cooling capacity... new low price... and available in 5 capacities!



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SC-48

GREENHOUSE CROPS

Ohio Holds Its First

GREENHOUSE CONFERENCE

Growers get latest information
on growing, marketing methods

By **ELDON S. BANTA**

GREENHOUSE vegetable growers who attended a two-day conference at the Ohio Experiment Station recently got the latest information on growing and marketing their specialized crop.

The first conference of its kind in Ohio attracted 76 growers from Ohio, Indiana, Michigan, Wisconsin, Oklahoma, and Virginia. Combined with lectures and discussions were laboratory sessions; for example, growers made mounts of disease organisms and nematodes and examined them under microscopes to gain a better understanding of these troublemakers.

Among the practical information carried home by growers were the following points:

1) All plants are not equally efficient in obtaining nutrients from the soil. Greenhouse tomatoes respond differently, too. By using foliage and soil analyses and by knowing the nature of the plant's feeding ability, it is now possible to fertilize tomatoes accurately.

2) Tomato plants grown under temperatures of 50° to 55° F. for two or three weeks after the first two leaves have expanded and then held at normal temperatures for the remainder of the plant-growing period are being checked for increased number of buds per cluster and increased set of early fruit. If this occurs, it will be one way of raising profits, since it would boost yields without increasing costs.

How to Improve Flavor

3) The grower can control, to some degree, the flavor of tomato fruits. Flat flavor results from fruits having low acid and low sugar content when light is poor, as generally occurs from December to April. When light condition is poor, less water and nitrogen and lower night temperatures should be the rule.

4) Greenhouse growers need a more suitable market container than the 8-pound basket. Customers in the

retail store ruin too many tomatoes; a consumer package unit may be better.

5) A more uniform pack of greenhouse tomatoes is needed, especially as to color and maturity. It is much easier to hold a basket of uniform tomatoes than one with various degrees of maturity.

Competition From 'Vine-Ripes'

6) Vine-ripened tomatoes from the South are becoming increasingly competitive to northern greenhouse-grown tomatoes. Changes in harvesting and handling are essential if growers are to meet this competition. Among suggested procedures: a) Harvest tomatoes at pink-green stage; b) harvest more frequently (every day is suggested); c) put fruits into storage at 45° F. immediately after picking; d) store fruits at a temperature as near 50° F. as possible for best quality; e) if color needs improvement, hold tomatoes at 68° F. or above, with humidity around 85%.

7) Light affects the vitamin A and C content of tomatoes as well as their flavor; the lower the light intensity, the lower the vitamin content.

8) Cool night temperatures in the greenhouse during harvest periods makes for firmer tomatoes that hold up better on the market. A temperature of 55° F. is good.

9) Under conditions of low light intensity and high potash content, tomato plants produce fruits that will be soft and will not hold up in the market.

10) Cracking and blossom-end rot can be prevented by maintaining an even water supply to tomato plants; avoid overwatering.

11) Steam sterilization destroys most parasitic nematodes, but chemical fumigation appears to be more practical for the future. Some good soil fumigants now in use are DD, ethylene dibromide, Vapam, and chloropicrin.

Plastic Greenhouses

12) Two projects to improve the plastic greenhouse involve the use of bonding materials to secure the plastic to the frame in place of nails and wood strips, and the use of sliding plastic roof panels which can be removed and stored during the summer. Sunlight is the biggest destroyer of plastics.

Two promising bonding adhesives are 76-4004 National Adhesive Corp., 270 Madison Ave., New York, N.Y., which works well on polyethylene, and P-578 Rubber & Asbestos Corp., 225 Belleville Ave., Bloomfield, N.J.

13) It is just as important to provide adequate ventilation in plastic as in glass greenhouses. Ventilation

AMERICAN VEGETABLE GROWER

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ETABLE GROWER

is important in growing good tomato
crops free of diseases.

14) Ohio has in progress a breed-
ing program to develop better varie-
ties of Bibb lettuce. Several strains
have been selected from commercial
seed. They vary as to size and shape
of head, leaf form, color, and flavor.
Some show more resistance of Botry-
tis rot than do others.

Growing Bibb Lettuce

15) Best conditions for growing
Bibb appear to be under night temper-
atures between 50° and 52° F. and



Bibb lettuce growing in Ohio Experiment Station
greenhouse was photographed two weeks before
harvest. Planting was spaced 7x7 inches, ferti-
lized with 200 pounds of ammonium nitrate per
acre, and grown under 52° F. night temperature.

day temperatures of 65° F. or below;
preferably 62° F. on cloudy days.
Plants produce top yields when
spaced 7 x 7 inches and fertilized with
200 pounds of ammonium nitrate per
acre. THE END.

Builds Water Tank

LOUIS LECKLER, vegetable
grower at La Salle, Mich., built
this water supply tank for servicing
his transplanter and sprayer in the
field.

The 1000-gallon tank is balanced on
a steel frame mounted between dual
tires which make for easy maneuver-
ability. Since the tank is balanced, it

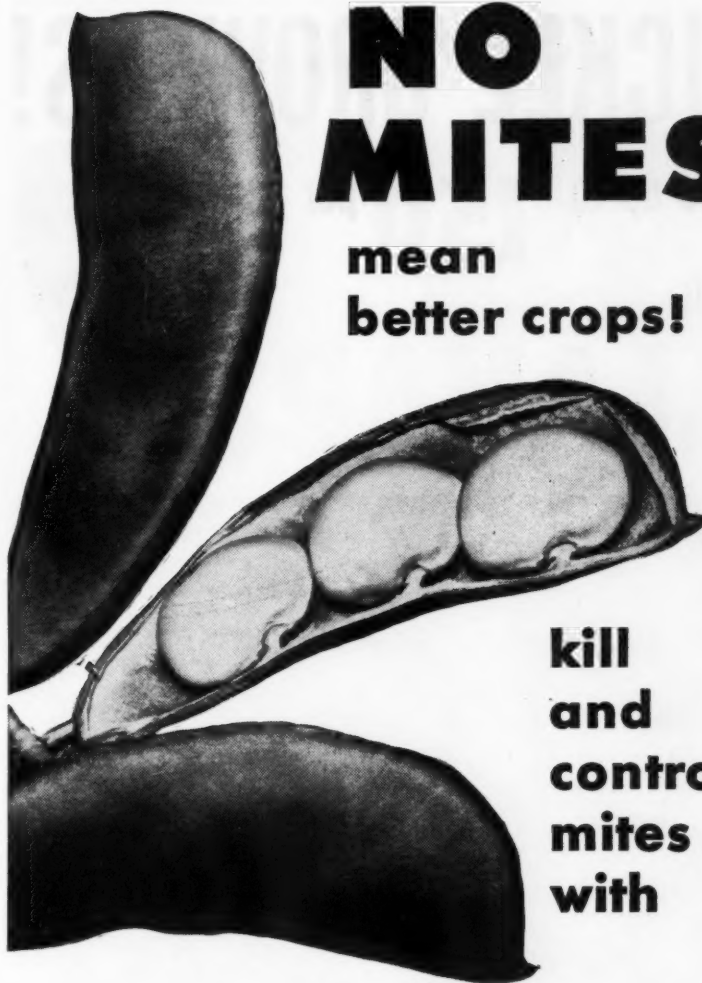


is easy to attach the trailer to the
tractor drawbar. The gasoline-driven
pump has a two-way arrangement so
that it can be used both for filling the
tank and pumping out the water.—
E. C. Wittmeyer.

MAY, 1957

NO MITES

mean
better crops!



kill
and
control
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with

ARAMITE

There's more money for you from better crops. A small per-acre
investment in Aramite can make a big dollar difference. Year after
year, field results nationwide prove the bigger and better yields you
can expect with Aramite—the safest, best-known mite-killer today.

Aramite gives outstanding control of most mite species including
Two-Spotted, Atlantic, and European Mites. Equally effective on
melons, citrus, corn, tomatoes, apples, peaches, and ornamentals. It is
compatible with most insect and fungus-killing chemicals, has longer
residual activity and is non-hazardous to humans and animals.

For more than 19 fruit and vegetable non-fodder crops, including
lima beans, the Miller Amendment (Public Law 518) has approved
Aramite with a tolerance established of one part in a million.



United States Rubber

Naugatuck Chemical Division

Naugatuck, Connecticut

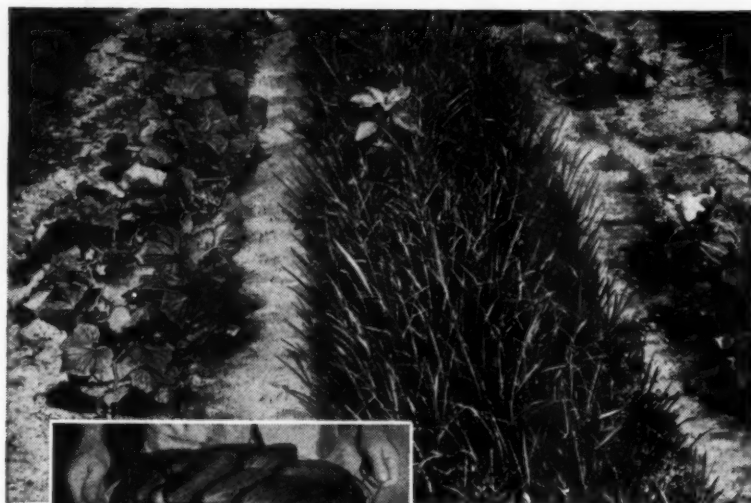
producers of seed protectants, fungicides, miticides, insecticides, growth retard-
ants, herbicides: Spergon, Phygon, Aramite, Synklor, MH, Alanap, Duraset.

PICKLE GROWERS!

save up to \$**150** per acre

with

ALANAP



Weed-free rows shown at left were treated at seeding with Alanap. Note adjacent weed-choked area.

PRACTICALLY ELIMINATES HAND WEEDING

Extensive field usage proves that Naugatuck's new herbicide, Alanap®, can save growers of cucumbers, melons and cantaloupes countless dollars by practically eliminating hand weeding.

One comparison reveals that *cucurbit yields were actually doubled by a pre-emergence application of Alanap*. "Plants in untreated rows were severely stunted by weed competition before the fields could be cultivated and hoed, whereas treated rows were still not suffering ... two months after planting."

As a pre- or post-emergence weed killer, Alanap gives excellent control of a wide variety of weeds, is non-hazardous to humans and animals, easy to apply, low in cost, and safe on recommended crops including asparagus.

Order Alanap from your local supplier today. Write, wire or phone us if unable to locate immediate source of supply.



United States Rubber

Naugatuck Chemical Division

Naugatuck, Connecticut

producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Spergon, Phygon, Aramite, Synklor, MH, Alanap, Duraset.



Weed-free lima beans at right were given pre-emergence treatment with DNBP at rate of 6 pounds per acre; those on left were not treated.

WEED CONTROL

Northern growers are cutting weeding costs with chemicals

By E. K. ALBAN
Ohio State University

MANY northern vegetable growers are finding that proper use of herbicides can result in reduced costs of production of quality vegetables. While there are still many problems to be solved, much of the early confusion experienced with the introduction of herbicides for use in weeding vegetable crops has been eliminated.

In 1946 there were only one or two recommendations in regard to the use of chemicals for weeding vegetable crops. In the short space of 10 years we have moved from a one- or two-crop basis of chemical weed control to where we now find 24 important vegetable crops which can at least be partially weeded with chemicals.

Two major factors which are contributing to a slower acceptance of a chemical weed control program include: 1) a serious shortage of trained personnel who are familiar with both vegetable crop production and the correct use of herbicides with these crops; and 2) the lack of adequate spray equipment to carry out the specialized application of herbicides in vegetable crop plantings.

As far as the spray equipment problem is concerned, growers have done an excellent job in rebuilding standard equipment to do this specialized task. However, many small acreage vegetable growers have not been able to adapt their equipment to do a good job, and there is a real need for a good vegetable herbicide sprayer.

Promising New Materials

Of the new materials which should soon be available for commercial use, the following look particularly promising: *Simazin* (Geigy Chemical Co.). This material at a 1-, 2-, or 4-pound

AMERICAN VEGETABLE GROWER



Light were given pre-DNBP at rate of 4 lb/acre. Weeds were not treated.

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ETABLE GROWER

per acre rate has looked very promising as a pre-emergence treatment for sweet corn, lima beans, asparagus, and potatoes. As a post-emergence treatment on tomatoes and potatoes, this chemical during the 1956 season provided excellent control of most broad-leaf and annual grass weeds with no damage noted to either crop. An experimental chemical, *Geigy 444*, has also provided excellent results with snap beans as well as the previously mentioned crops.

Diuron (DuPont Chemical Co.) has been used for several years; however, with the emulsifiable formulation it would appear that it could have increased use with asparagus and possibly sweet corn and potatoes.

Neburon (DuPont Chemical Co.) has provided excellent control of chickweed and may well find considerable use in controlling this weed in perennial vegetable crop plantings. Neburon also looks promising in the

(Continued on page 24)

PARTIAL LIST OF CROPS AND WEED CONTROL CHEMICALS, WITH SUGGESTED PROCEDURES NORTHERN GROWERS MAY USE IN 1957*

Vegetable Crop	Chemicals	General Use	
		Before crop emergence	After crop emergence
Asparagus	Karmex W or monuron	X	—
	Crag Herbicide I or Seacon	X	—
	Alanap or NPA	X	—
	2,4-D	X	—
	Cyanamid	X	—
Bean—Lima or Snap	Dinitro, DNBP, Sinox PE, or Dow Premerger	X	—
	Randox or CDAA	X	—
Beet	Stoddard Solvent	X	—
	Sodium TCA	—	X
	Sodium chloride	—	X
Broccoli	Sodium TCA	X	—
Cabbage	Stoddard Solvent	—	X
Cauliflower	Stoddard Solvent	—	X
Carrot	Stoddard Solvent	—	X
Chili	Stoddard Solvent	—	X
Parsley	Stoddard Solvent	—	X
Celery—seedling stage	Stoddard Solvent	—	X
Corn	2,4-D	X	X
	Dinitro, DNBP, Sinox PE, or Dow Premerger	X	—
	Sinox PE	X	—
	Randox or CDAA	X	—
Lettuce	Chloro IPC	X	—
Collards	Chloro IPC	X	X
Kale	Stoddard Solvent	X	X
Onion	Potassium cyanate	X	X
Pea	Dinitro, DNBP, Sinox PE, or Dow Premerger	—	X
Potato	Dinitro, DNBP, Sinox PE, or Dow Premerger	X	—
	Karmex DW or diuron	X	—
	2,4-D	X	—
Spinach	Chloro IPC	X	—
	Stoddard Solvent	X	—
Tomato—direct seeded	Stoddard Solvent	X	—
Pumpkin	Alanap or NPA	X	—
Squash	Alanap or NPA	X	—
Cucumber	Alanap or NPA	X	—
Muskmelon	Alanap or NPA	X	—

*Growers should follow local recommendations and should exercise extreme care in following label instructions to avoid harmful residues on crops.

MAY, 1957

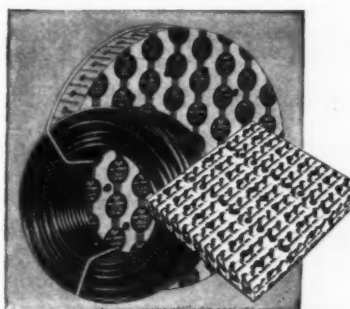
Make your own "oasis"



with USS NATIONAL* Polyethylene PIPE

THANKS to National Polyethylene Pipe, the installation of a low-cost irrigation system is now an easy, one-man job. You can have all the water you want, when and where you want it, at minimum cost, and you can install the system yourself.

National Polyethylene Pipe is flexible. It handles like hose—can be run around corners, over obstacles and under fences. You can cut it with a knife or hacksaw, insert the fittings and secure them with a simple clamp and screwdriver. It couldn't be easier. And tying into present systems is no problem... threaded adapters are available in a variety of sizes.



NATIONAL TUBE DIVISION, UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

NATIONAL Polyethylene PIPE



UNITED STATES STEEL

TOUGH—National Polyethylene Pipe is impervious to salt, alkali, acid and other chemical actions. It won't corrode or rot. Water freezing in the pipe will not burst it. Rough usage won't crack or break it. It will not stiffen... remains flexible in temperatures from -90°F. to +120°F.

PRACTICAL—National Polyethylene Pipe comes in lengths up to 400' and in diameters of from 1/2" to 6". Made of 100% virgin polyethylene plastic to which 2% of an inert black pigment filler has been added to prevent deterioration from ultraviolet rays. A 200' coil can be carried on the shoulder, weighs only 86 pounds. And the smooth inner surface of this pipe offers low flow resistance to pumping; inhibits chemical deposits.

*Trademark

Get complete details on the many uses of National Polyethylene Pipe by writing to: National Tube Division, United States Steel Corporation, 525 William Penn Place, Pittsburgh 30, Pa. Ask for Bulletin No. 29.

This seal of the National Sanitation Foundation is carried on all USS National Polyethylene Pipe, and means Tested... Approved... Sanitary!



KILL QUACK GRASS



MH
with

Quack grass is licked! Now MH not only reduces quack grass growth, but also eliminates this nuisance, in areas devoted to high-value crops. MH is so safe that seeds of vegetable and field crops can be planted on treated areas as soon as plowing and preparing the soil are completed. No soil toxicity.

Order MH from your local supplier today. Write, wire or phone us if unable to locate immediate source of supply.



United States Rubber
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Naugatuck, Connecticut

producers of seed protectants, fungicides, miticides, insecticides, growth retardants, herbicides: Sperton, Phygon, Aramite, Synkior, MH, Alanap, Duraset.

WEED CONTROL

(Continued from page 23)

post-emergence application to tomatoes and potatoes for control of annual grasses late in the season.

Amino triazole, which has been available for several years, looks as if it may have some value as a post-emergence broadleaf and grass control treatment with sweet corn. This chemical is also invaluable for the control of Canada thistle and possibly quack grass in non-crop areas or as a spot treatment in a crop where it is more important to stop the spread of these weeds than to harvest the crop.

Preplanting treatments of quack grass with *Dalapon*, *sodium TCA*, and *maleic hydrazide*, offer excellent possibilities in control of this troublesome weed in some vegetable plantings.

Soil Fumigants

Soil fumigants and other soil treatments which have been very effective in general weed control when applied ahead of crop planting also appear to offer a new approach to the problem. While some of these chemicals have been available for several years, the increased interest in weed control has resulted in an expansion of effort with these soil treatments. THE END.

CALENDAR OF COMING MEETINGS AND EXHIBITS

June 13-15—Idaho Shippers Association summer convention, Sun Valley.—Edd Moore, Sec'y, P. O. Box 1100, Idaho Falls.

June 24-27—Second annual Mushroom Industry Short Course, College of Agriculture, Pennsylvania State University.—Director of Short Courses, University Park.

June 27-29—Annual Watermelon Festival, Cordele, Ga.—Sam Roobin, Gen. Chairman, Cordele.

July 25-Aug. 2—National Vegetable Week, sponsored by Vegetable Growers Association of America. Joseph S. Shelly, Sec'y, 528 Mills Bldg., Washington 6, D. C.

Aug. 13-14—Ohio Pesticide Institute annual summer meeting, Ohio Agricultural Experiment Station, Wooster.—J. D. Wilson, Sec'y, Wooster.

Aug. 16-Sept. 30—Vegetable Growers Association of America, third Grand Tour of Europe visiting England, Holland, Germany, Austria, Switzerland, Italy, and France. Tour conducted by Walter F. Pretzer, % American Express Company, 1425 Euclid Ave., Cleveland 15, Ohio.

Aug. 17—Summer Field Day, Kansas State College Horticultural farm, Manhattan.—William E. Amstein, Sec'y, Manhattan.

Sept. 15-18—Produce Packaging Association 7th annual conference and exposition, Shoreham Hotel, Washington, D. C.

Oct. 2-3—Second International Potato Harvest demonstration, of individual machines which both lift and deliver potatoes into bags or a vehicle or container, Honnington Grange, Lillehall, Newport, Shropshire, England.—Potato Marketing Board, 50 Hans Crescent, Knightsbridge, London, S.W. 1, England.

Oct. 9-11—Florida Fruit & Vegetable Association 14th annual convention, Hotel Fontainebleau, Miami Beach.—Florida Fruit & Vegetable Assoc., 4401 E. Colonial Drive, Orlando.

Nov. 14-15—Western Growers Association 32nd annual convention, Hotel del Coronado, Coronado, Calif. Headquarters; 606 So. Hill St., Los Angeles 14, Calif.

Dec. 9-12—Vegetable Growers Association of America 49th annual convention, Jung Hotel, New Orleans, La.—Joseph S. Shelly, Sec'y, 528 Mills Bldg., Washington 6, D. C.

AMERICAN VEGETABLE GROWER

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TABLE GROWER

Answering Your QUESTIONS

Don't let your questions go unanswered. Whether large or small, send them with a three-cent stamp for early reply to Questions Editor, AMERICAN VEGETABLE GROWER, Willoughby, Ohio.

MELON CULTURE BULLETIN

I would like information on the best methods to grow melons.—Illinois.

Write to the Bulletin Office, College of Agriculture, University of Illinois, Urbana, Ill., and ask for Cir. No. 675 entitled "Growing Melons in Illinois."

BUNCHING & TYING MACHINES

Where can I obtain a machine designed to bunch and tie vegetables?—Virginia.

Try Felins Tying Machine Co., 3351 N. 35th St., Milwaukee, Wis.; National Bundle Tyer Co., Blissfield, Mich.; and Trecott Co., Fairport, N. Y.

WANTS SWEET CORN PICKER

Is there an attachment which can be put on a corn picker which will pick roasting ears for the fresh market without bruising?—Wisconsin.

The Canning Machinery Div. of Food Machinery and Chemical Corp., at Hoopes-ton, Ill., have attempted to modify their corn picker so that bruising would not occur to corn destined for the fresh market. However, there is a certain amount of damage which will occur with any variety of corn picked, the extent depending upon the size of the ear, the variety, and weather conditions preceding harvest, and this bruising cannot be specified to certain set limits.

CROSS-POLLINATION OF CUCURBITS

Will cucurbits cross-pollinate to such an extent that the fruit of any would be affected the first year?—Illinois.

The cross-pollination of cucurbits that may occur during the first year will not show up until seed is planted and fruit matures the second year.

WHERE CAN I BUY SEED

Of Rutgers x Pritchard F2 hybrid tomato?—New York.

Try Agricultural Alumni Seed Improve-ment Association, R. 1, Lafayette, Ind.

Of Red Beauty potato?—Michigan.

From L. L. Olds Seed Co., Madison, Wis., in retail quantities; in carload lots from Starks Farms, Inc., Rt. 9, Rhine-lander, Wis.

Of Feron tomato?—Texas.

From Glecklers Seedmen, Metamora, Ohio.

BAYOU PEARL AND WINTERGREEN

I'm interested in finding a shallot variety that will not "button" on top. Can you recommend one that will do well in my area?—Alabama.

Two recent shallot introductions by the Louisiana Experiment Station, named Bayou Pearl and Wintergreen, do not "button" on top and would be very desirable to try in Alabama.

TOMATO SET HORMONE

Will you please tell me where I can get Duraset-20W for tomatoes.—New Jersey.

Duraset-20W is manufactured by the Naugatuck Chemical Div., U. S. Rubber, Naugatuck, Conn.

MAY, 1957

Myers Sprayers Deliver PLENTY OF AIR FOR TWO-WAY SPRAYING



Field experience in air spraying proves that plant foliage **MUST BE SPRAYED FROM BOTH SIDES TO INSURE BEST POSSIBLE COVERAGE.** Myers air sprayers deliver plenty of air volume and velocity to do this job. With Myers you can set up spray patterns for right- and left-hand spraying even where cross-wind conditions exist. Myers rigs produce a high-speed air stream (either one- or two-side delivery) that displaces the air in and around plants and deposits an even, effective cover from top leaf to ground level.

The combination of a Myers high-pressure pump and Myers ceramic-nozzle discs produces spray droplets of just the right size. There's no waste of valuable spray material due to oversize droplets falling out of the air stream. And the high-speed air stream is highly efficient because Myers double centrifugal fans discharge air straight out both sides.

See how other features of Myers Air Sprayers can help you produce greater high-profit yields. Call your Myers dealer today for details.

Myers® POWER SPRAYERS

WATER SYSTEMS AND IRRIGATION PUMPS

THE F. E. MYERS & BRO. CO.

Ashland, Ohio • Kitchener, Ontario



Grow with BIRD

Better Plants
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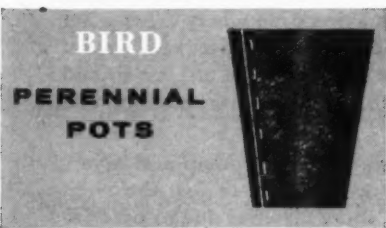
Eliminate transplant shock by containing root growth to transplant stage with Bird Vita-Bands. Crops mature seven to ten days earlier. Choose from three types — variety of sizes.



Plant the entire pot — it disintegrates allowing complete root penetration. Ideal for annuals, vegetables, perennials. Choice of five sizes.



It's easier to sell twelve plants at a time with Gro-Tainer. Durable fibre is lightweight, inexpensive. Attractive green color blends with plant foliage.



Lightweight but tough! Four sizes accommodate all kinds of perennials, mums, bulbs, shrubs, roses. Don't forget Bird Vita-M growing Pots and Bird Red Pots for shipping.

Bird & Son, Inc.
Dept. AVG
East Walpole, Mass.

Please send me free booklet on the complete Bird line.

Name.....

Street & No.....

City & State.....



STATE NEWS

(Continued from page 14)

\$22.50 per ton—the same price as last year for the Pearson types. However, some early starters have rounded up acreage at \$20 a ton, creating an uncertain situation that has caused many processors to stop buying at the \$22.50 figure.

There is a heavy carryover of processed tomatoes from last year's record crop and many growers and processors, including the California Tomato Growers Association, have recommended a cutback in production this year to maintain the \$22.50 price.—Neale Leslie.

50th Anniversary

OREGON—The Lane County Horticultural Society, oldest horticultural society in Oregon, recently observed its 50th anniversary. Kent Peterson, Junction City, was elected president; Edsel Chase, Coburn, vice-president; and R. E. Kerr, Eugene, secretary-treasurer.

Contracts for pea acreage between growers and the Birdseye cannery at Woodburn will call for 200 acres in the Canby bottoms instead of the 300 acres of recent years. Reasons given for the reduction in acreage are high cost of production, lack of local labor, and a large carryover of frozen peas.—Harold and Lillie Larsen.

Heart Disease and Vegetables

VIRGINIA—The part that vegetables play in maintaining a health balance in human beings and protecting man from various ailments was pointed up recently by Dr. Hunter McGuire Doles, prominent Norfolk physician.

His study of heart disease patients, Dr. Doles stated, has led him to conclude that eating fresh or canned vegetables in preference to frozen vegetables can prevent coronary heart disease.

According to Dr. Doles, the increase in

GREENHOUSE VEGETABLE DAY

The Ohio Experiment Station will hold its annual Greenhouse Vegetable Day on May 9 at Wooster.

Directing the activities will be Dr. F. S. Howlett, chairman of the department of horticulture, and Dr. I. C. Hoffman. They plan to emphasize the following four important points: 1) Breeding of greenhouse tomatoes; 2) effect of cold treatment on the number of blossoms and yield of early tomatoes; 3) effect of different amounts of irrigation water on the occurrence of blotchy ripening of tomato fruits; and 4) breeding and culture of Bibb lettuce—a progress report on two years of work with Bibb.

Plant pathologist L. J. Alexander will emphasize the breeding of greenhouse tomatoes for mosaic resistance and the causes of blotchy ripening in tomato fruits. Entomologist Ralph S. Nelswander will emphasize new methods of insect control in the greenhouse.

the use of frozen vegetables is directly related to the increase in coronary thrombosis. He stated that freezing vegetables destroys vitamin K, the important factor in the manufacture of prothrombin—an element in the body that prevents coronary thrombosis. The heating of fresh vegetables and the canning process does not destroy vitamin K, he stated.

Vegetables that are rich in vitamin K when canned or eaten fresh, according to Dr. Doles, are spinach, cauliflower, cabbage, tomatoes, lettuce, collards, string beans, and corn.

Potato Chart

NEW JERSEY—A new chart with the latest recommendations for controlling insects and diseases in white potatoes has been prepared by Spencer Davis, Jr., and Leland Merrill, Jr., extension specialists in plant pathology and entomology, respectively. The recommendations are based on work done by John Campbell and Jack Reed, research specialists at the New Jersey Experiment Station.

Copies are obtainable from county agricultural agents or from the Publications Department, College of Agriculture, Rutgers University, New Brunswick.

Know Your . . . VEGETABLE SEEDS

By VICTOR R. BOSWELL
U.S. Department of Agriculture

ASPARAGUS

ASPARAGUS is the most important perennial vegetable grown in this country. Plantings remain productive from about a dozen years up to 25 years and more, the life of the planting depending on many factors. Seed is essential for producing plants for new plantings. Vegetative propagation is possible but not practicable for growing the crop for food. Unfortunately, dependable figures on amounts of asparagus seed production are not readily available.

The asparagus fruit is a small, globular, three-lobed, red berry that contains up to six seeds. The berries are removed from the harvested mature female plants by flailing on canvas or by machine threshing. The fleshy berries are mashed, the pulp and seeds promptly separated by agitation and washing with water, and the seeds dried.

Asparagus seeds are dull to shiny black and very hard. Seeds that develop singly in locules of the fruits are smoothly rounded, nearly globular; those that develop as "twins" within single locules exhibit flattened areas where they were crowded together.

Because of their hardness the seeds are slow to germinate without special treatment. Soaking in water at about 90° F. for three to five days will hasten germination appreciably. Unlike most vegetable seeds they will tolerate submergence in



standing water at room temperature, or cooler, for months without injury. If, however, air is bubbled through the water thereby increasing the oxygen supply, or if the seeds are removed to a moist medium with access to air they will sprout promptly. The seeds are generally planted without pre-soaking.

Asparagus seed is relatively long-lived in good dry storage.

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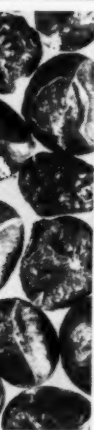
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TABLE GROWER

STATE NEWS Special Report

SNAP BEAN VARIETIES ON TRIAL IN RHODE ISLAND

RECENT research at the University of Rhode Island Agricultural Experiment Station indicates that Contender, one of the mosaic-resistant snap beans, is well adapted for early planting in southern New England.

Field trials indicate that this variety is outstandingly early and outyields Stringless Black Valentine, a standard variety in this area, in both early and total yield. Controlled temperature tests show that Contender germinated in a cold soil as rapidly as Black Valentine. Date-of-planting field trials indicate that Contender will outproduce Stringless Black Valentine even when planted in a cold soil.

Contender, originated by the Southeastern Vegetable Breeding Laboratory at Charleston, S.C., and introduced in 1949, was one of the first mosaic-resistant varieties to be offered for sale. (Virtually all the major seedhouses carry variety.—Ed.)

Growers in southern New England have been reluctant to accept these new varieties primarily due to a lack of testing and the belief that Stringless Black Valentine, a standard variety in this area, is superior to others in ability to germinate in cold soils. Since growers in this area frequently accept the chance of a late frost in order to take advantage of a favorable early market, it is not unusual to find poor stands where germination was retarded by low temperatures.

During the past three years, a number of recent introductions have been tested in comparison with standard adapted varieties usually grown in this area. The beans were planted about June 1 of each year, and germination was no problem with any variety under test, since the soil temperature was favorable for germination at that date. The beans were planted, grown, and harvested according to standard practices used in this area.

Contender outproduced Stringless Black Valentine in both early and total yield over a three-year period, and this trend was

Variety	Early yield ¹ (Bushels per acre)			
	1954	1955	1956	Mean
Contender	187	181	103	157
Stringless Black Valentine	128	104	62	98

Variety	Total yield ² (Bushels per acre)			
	1954	1955	1956	Mean
Contender	513	517	532	521
Stringless Black Valentine	495	328	359	394

¹ Production totals for first two pickings.
² Production totals for first four pickings.

remarkably consistent throughout the testing period. Both varieties reached the productive stage on approximately the same date, but a heavier set in Contender resulted in heavier early yields which apparently continued throughout the productive cycle to give higher total yield also.

In other tests, we found nothing to indicate that Stringless Black Valentine was superior to Contender in ability to germinate or produce bigger crops when planted in a cold soil. Contender apparently does have the ability to produce bumper crops of early snap beans and, in this respect, is well adapted to this area. The only qualification we make when recommending this variety is to use other varieties for fall plantings, since a purple splashing frequently develops on the pods in fall during periods of cold nights.—W. L. Ogle.

MAY, 1957

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Top-dressed, side-dressed or plowed down, "NuGreen" feeds crops nitrogen as they need it for profitable, season-long growth. "NuGreen" aids decay of plant residues and cover crops, and it resists leaching.



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Sprayed on foliage or dissolved in irrigation water, "NuGreen" feeds crops nitrogen through leaves and roots, giving them a growth boost almost instantly. "NuGreen" can be combined with pesticide sprays for even greater application economy.



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Uniform distribution by air is easy with Du Pont "NuGreen" because it is concentrated 45% nitrogen in free-flowing shot form . . . gives you more coverage per flight. "NuGreen" won't corrode equipment and saves you labor because you handle less material per unit of nitrogen.

You profit with Du Pont "NuGreen" no matter how it's applied . . . your crops will be fed nitrogen for maximum growth and yields. "NuGreen" comes in 80-lb. bags—order Du Pont "NuGreen" from your supplier today.

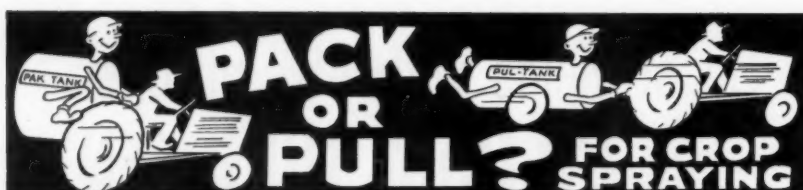


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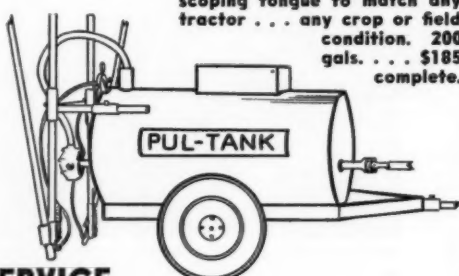
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Ready to attach to any standard tractor . . . on or off in a jiffy . . . 100 gals.

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Has adjustable axle and telescoping tongue to match any tractor . . . any crop or field condition. 200 gals. . . \$185 complete.

POTATOES

PROCESSED POTATOES

Consumption is rising and new products are developing rapidly

By H. J. EVANS

THE per capita consumption of processed potatoes is increasing. About one-sixth of the total United States potato crop is now processed. The chief product, of course, is potato chips, which last year utilized about 40 million bushels of potatoes.

From the chip industry's research program have come new candies, including potato chip bars. Crushed chips are pressed together in the form of candy bars which may be chocolate-covered. This potato chip bar is highly regarded by the armed services because, with its high concentration of calories, minerals, and other nutrients, it makes an ideal emergency ration.

There are other byproducts of the chip industry, such as potato chip candy, chiplets, and potato nuts. Chiplets and nuts are really snack items. Potato nuts are made by frying quickly in deep fat quarter-inch diced potatoes. The hot fat seals over the outside so that the nut tends to be hollow in the center. Similar to French fries in taste, they are especially delectable.

Frozen Products

Frozen French fried potatoes are second only to peas in the frozen food line. Also available in frozen form are diced potatoes, potato patties, whipped potatoes, potato puffs, and potato soup.

Frozen diced potatoes are ideal for hash-browning, because they cook very quickly. Patties and puffs are mixed with other ingredients such as flour, eggs, and seasoning and are partially cooked before being shaped and frozen. These products are rapidly gaining in popularity. Frozen cream of potato soup is also rapidly becoming a popular item.

The use of small potatoes packed in both consumer-sized and gallon cans is increasing. The latter size is used extensively by the restaurant trade because the potatoes are readily available for French frying and roasting.

Also canned are shoestring potatoes, which are a form of French fried potatoes. Hermetically sealed, they keep indefinitely and are always ready to serve on short notice.

Canned stews and hashes containing potatoes have long been on the market. One of the most popular

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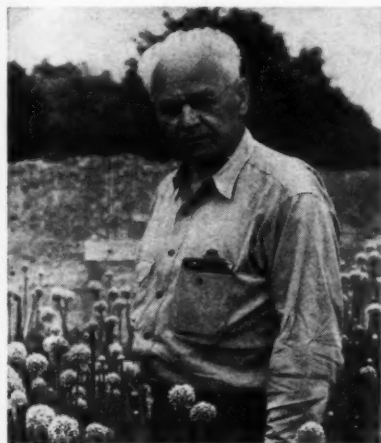
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ITABLE GROWER

canned potato soups, Vichyssoise, is also sold in frozen form.

Potato flakes, the latest potato product, look especially promising for the future. The potatoes are cooked, dried, and packed in pasteboard boxes. They can be prepared in two minutes with the addition of hot water or milk and seasoning. The finished product is better than many



USDA EXPERT MAKES CHANGE

Dr. Henry A. Jones, for more than 20 years head of onion and potato breeding programs for the USDA, joined the Dessert Seed Company, El Centro, Calif., on March 1, 1957. He will head the company's plant breeding department. Dr. Jones is known throughout the seed industry for his work with onion and spinach hybrids.

restaurants habitually serve. The flakes always produce a nice white bowlful of mealy mashed potatoes, and are proving so popular that several of the large manufacturers are now establishing plants in various potato-producing areas. The process for potato flakes was developed at the USDA Eastern Utilization Research Laboratory at Philadelphia.

One of the presently developing forms of potatoes is the prepeeled potato, which is now being used by restaurants and other institutions. There are probably 30 plants which peel and cut potatoes into pieces for French frying or peel them for boiling in large distribution centers. Because of the labor saved, restaurants have found that prepeeled potatoes are a real economy.

Other potato products are starch and flour. Potato flour is used extensively, since it tends to keep bread and cake moist for a longer time. There are also granulated potatoes and dehydrated potatoes being marketed, and various other products of minor importance.

All in all, the processed potato business has a bright future, with per capita consumption and population both increasing. The potato industry is ready to meet any challenge in the way of increased demand and is searching for better varieties and handling methods.

THE END.

MAY, 1957

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Product of our complete PLANNED PACKAGING facilities, these marketing specialties are made of fine quality corrugated board, attractively printed in 2 colors. Sizes—2, 4, 8, 12, and 16 quarts. Wood or wire handles. Shipped flat for easy storage. Easy to set up. Write PRODUCE SALES, The Ohio Boxboard Co., Rittman, Ohio.

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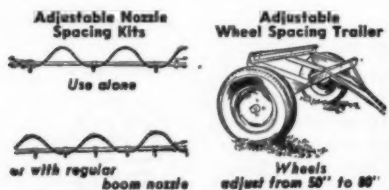
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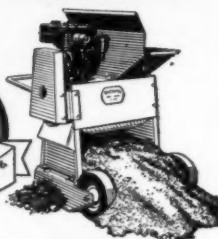
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- " Beltsville Bunching Lb. 7.00
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- " White Bunch Lb. 4.50

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WRITE for our free market gardeners and florists price list.

MIDWEST SEED GROWERS

Dept. V-57 505 Walnut, Kansas City, Mo.

POTATO SPRAYING

(Continued from page 12)

fixed coppers had failed to control, increased the yield by 53%.

For a few years DDT gave good control of flea beetles, but they soon developed such a degree of resistance to DDT that it began to fail to give satisfactory control as early as 1950.

During the last 10 years a considerable number of organic insecticides have been developed and introduced by various chemical companies, and many of these have proved useful. None has given any better control of leafhoppers than has DDT, but some have been more dependable in the control of flea beetles. Dieldrin has been one of the best in controlling this insect, and it is now being used to supplement, but not replace, DDT.

Parathion is being used by some growers. This material gives good control of virtually all of the insects that attack potatoes in Ohio, including leafhoppers, flea beetles, aphids, and white flies, but it has not equalled dieldrin in the control of flea beetles. Systox, a systemic, is another insecticide that has done very well on potatoes, but gives little control of flea beetles.

Thus, after comparing most of the new fungicides and insecticides that have been introduced during the past 20 years, the present first choice of the authors in materials, and the per acre rate of application is:

Parzate or Dithane Z-78 at 3 pounds
or
Dithane D-14 or liquid Parzate at 3 quarts plus
zinc sulfate at 1½ pounds
plus
DDT (50W) at 1 pound and Dieldrin (50W)
at ½ pound

Variations of these schedules may be used by substituting Bordeaux mixture, a fixed copper, maneb, or captan as the fungicidal ingredient, and parathion may be used as the insecticide, depending upon grower preference.

THE END.

BUILD A POTATO STORAGE



Plans for a modern, low-cost potato storage are now available to AMERICAN VEGETABLE GROWER readers. The above-ground 50-foot square storage is designed to hold 17,500 bushels. A list of materials is included with the plans. Send remittance of \$1.50 in form of check or money order to AMERICAN VEGETABLE GROWER, Wilmoughby, Ohio.

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PRAYING

(from page 12)

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STORAGE



w-cost potato stor- ble to AMERICAN eaders. The above- storage is designed A list of materials ns. Send remittance ck or money order BLE GROWER, Wil-

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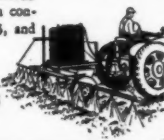
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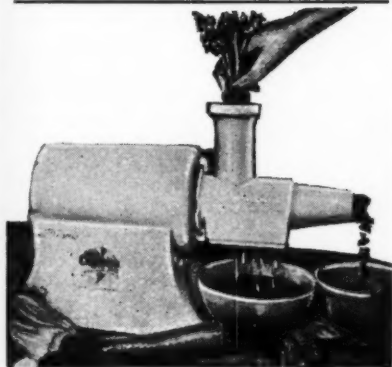
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Tomatoes.....2-5 tons Peas.....1-2 1/2 tons

Above are records of actual increases in yields per acre on hundreds of farms all over the country. Comparable results reported on other vegetables.

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W. R. Laboratories, Dept. V. G.
639 E. Lockeford St., Lodi, Calif.

MAY, 1957

ANTIBIOTICS

(Continued from page 9)

growing on artificial media proved sensitive to it, and that it protected lettuce against gray mold and tomatoes against early blight. In tests at Beltsville, it effectively protected beans from powdery mildew and eradicated the fungus from previously infected plants. It also protected beans from rust.

Anisomycin was found to protect beans from rust and powdery mildew

NEW FORMULATION ON MARKET

Chas. Pfizer & Co., Inc., has announced that it will begin marketing a new antibiotic formulation this spring, Agri-mycin 500.

The new formulation combines Agri-mycin (streptomycin-terramycin) with a substantially water-insoluble copper fungicide for the first time in a single spray, giving growers a weapon with which to fight both fungus and bacterial diseases simultaneously.

Tests have shown the new combination to be more effective than either material used separately. As a spray or dust, it has proven effective for bacterial blight of celery, bacterial spot of tomatoes and peppers, and downy mildew of lima beans and cucurbits.

and lima beans from downy mildew. In addition, it eradicated infections by the two bean pathogens after the plants became infected.

Mycostatin, the only antifungal antibiotic in this group of six that is used for medicinal purposes, gave partial protection against infection of beans by rust and of lima beans by downy mildew.

Filipin was reported by University of Illinois scientists to protect spinach and cucumber seedlings against damping-off caused by Rhizoctonia. The Beltsville tests demonstrated protection of lima beans from downy mildew and partial protection from anthracnose infection, but a high concentration of the antibiotic was necessary.

F-17, a crude culture filtrate containing three and possibly four antibiotics, proved effective against bean rust. It was produced at the USDA Northern Utilization Research Branch, at Peoria, Ill. This antibiotic mixture not only protected beans from infection but also eradicated the rust from beans up to four days after infection. This material, however, is a long way from practical use by growers.

Cost Limits Use

The present cost of antibiotics restricts their use to crops having high value per acre or to diseases that require only small quantities of the active materials for control. As the use of antibiotics broadens, mass production may reduce the price. Furthermore, less purified antibiotics selected specifically for plant disease control may prove effective as control agents.

THE END.

ANTIBIOTIC

FUNGICIDES

IN

AGRICULTURE

The MURPHY CHEMICAL COMPANY

wishes to bring to the attention of research workers

the promising results that have been obtained with

GRISEOFULVIN

in controlling certain species

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those belonging to the genera

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To date **GRISEOFULVIN** has

shown promise against

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and against

Mycosphaerella on melons.

We invite the co-operation

of Research workers

interested in carrying out

trials on these

or related fungi.

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THE MURPHY CHEMICAL CO. LTD.

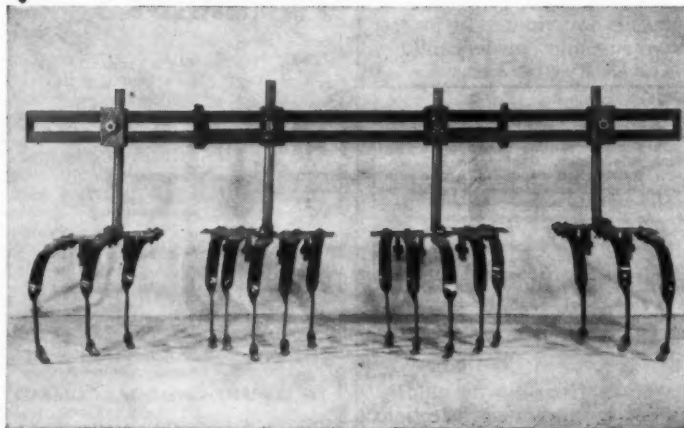
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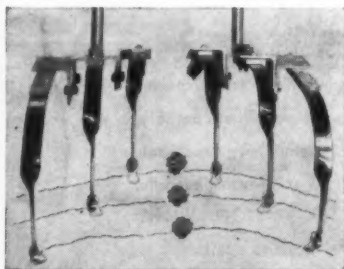
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JOHN BROOKS
Dept. 481, Box 212, St. Louis 3, Mo.

NEMATODES

(Continued from page 11)

develop into rugosities, or they directly induce more or less extensive decay.

Since most types of plant nematodes particularly attack the roots, the grower looking for evidence of nematode damage on his crops must pay special attention to roots. To be successfully examined for the presence of nematodes, roots must be dug properly. By no means should a grower pull and tear plants that he wants to examine for nematodes. In roughly uprooting attacked plants he will tear off the root sections most important for his examination.

There is a group of nematodes, the root-knot nematodes, that induces the formation of galls, knots, or swellings on roots, corms, rhizomes, tubers, bulbs, etc. These galls are symptoms

"Growing Tomatoes in Plastic Greenhouses" by E. M. Emmert, Leaflet 169, is available from the College of Agriculture, University of Kentucky, Lexington. This fine reference material gives information on soil preparation and sterilization, fertilizing, transplanting, watering, mulching, heating, ventilating, pruning, insect and disease control, and other related subjects.

most easily recognizable as of nematode origin, and they are most widely known by growers. But even in this instance identification based on these symptoms alone will not always be correct.

The crown gall organisms produce very similar symptoms, and still other agents also cause gall formations on roots; also, certain plants have naturally swollen roots that resemble those attacked by root-knot nematodes. Sometimes bacterial nodules which are beneficial are mistaken for signs of root-knot nematodes, or root-knot swellings are interpreted as beneficial bacterial nodules.

The grower may distinguish them as follows: root-knot galls are swellings of the root itself; bacterial nodules usually are attached to the side of a root, often with a short peduncle. On certain vegetables such as potato and sweetpotato tubers the grower may observe the females of root-knot nematodes with the naked eye or a magnifying glass as whitish spherical bodies in the tissue, the size of a pinhead, usually located near the surface.

Another group of nematodes, the cyst-forming ones, may also be recognized directly by the grower. Here too it is the female that grows to a spherical or lemon-shaped body, first of white, later of light to dark brown color. When attached to the roots or even when free in the soil, these females that contain eggs inside may be seen with the naked eye, or still

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better, with a hand lens. Some of these cyst-forming nematode types are among the worst of nematode pests; for example, the golden nematode of potatoes, the pea cyst nematode, the sugar beet nematode. The grower should particularly be on the lookout for them.

But bulb or stem, cyst-forming and root-knot nematodes form only a fraction of the many kinds of nematodes liable to attack roots and other underground parts of crops. The other types are more difficult to see, and the symptoms they produce are less specific. There are kinds that enter a root and live inside it either sedentarily or migrating through the tissues; there are many others that feed from the surface, usually by forcing their head-end into the tissue of the attacked plant. With diligence they locate the tender tissues or tissues rich in food or suitable to their mode of living. They not only deprive the host of food material and prepare entrance openings for other disease agents, but they interfere with the life processes of the host plant, often to a most disturbing degree.

The activities of these pests may be visible in various types of mutilations of the roots; the whole root system may be reduced and sparse compared with one free of nematodes. Roots are short, often bunched. Root tips are black or otherwise discolored and blinded. Witches'-broom types of roots are formed, or roots are bearded and show formations that growers often call hunger roots, stubby roots, coarse roots. Lesions of smaller or larger size and pronounced discoloration are seen. Decay may be observed, particularly affecting the end portion of roots. The cortex of attacked roots usually sloughs off easily. Sometimes the ends of the roots are swollen.

Finally, there is still another method the grower may use to determine if his plantings suffer from attacks by nematodes. It is through a test application of a nematocidal soil fumigant in a trouble area.

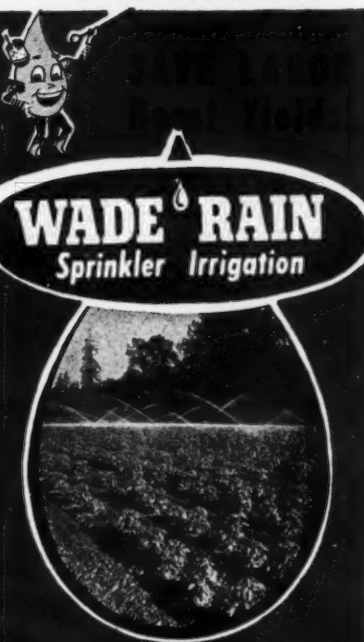
To be successful the soil should be amenable to such a treatment; that is, it should not be too heavy or sticky, nor should it be too stony or too peaty. The treatment should be made under proper weather conditions (soil not too moist nor too dry, the temperature best between 60° and 80° F.). The soil should also be free of corns, tubers, rhizomes, roots, etc., inside of which nematodes may be protected from the fumigant.

For the test a crop should be selected that previously showed decline on this plot or field. Assuming a proper execution of the fumigation, increased growth and yield should demonstrate the control of an inherent infestation.

THE END.

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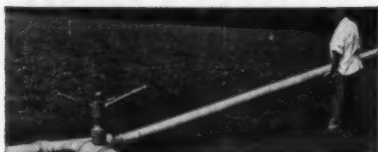
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AIR SPRAYING

(Continued from page 13)

the dilute formulation and is thus spoken of as 2X, 3X, or 4X concentrate. For example, the 2X concentration means that just one-half the amount of water used in dilute spraying is needed.

The advantages of concentrate spraying in row crops is quite evident. In addition to reducing the number of water-hauling trips, quicker drying of the spray material is made possible, eliminating runoff from foliage to the ground. This quick drying action can often spell the difference between adequate protection or not, especially in the event that a rain follows the application. Tests have shown that chewing insects are killed more quickly following concentrate spray applications.

Air spraying equipment is available in sizes to cover swath widths from 40 to 60 feet. Compare this to the 24- to 36-foot swath covered by conventional medium to large row crop booms, and it is apparent that the grower not only saves considerable time and labor, but also reduces considerably the number of "wheel rows" through his crops.

With the larger equipment designed to spray a 60-foot swath, traveling at a ground speed of 4 miles per hour, spraying is done at the rate of 24 acres per hour. It is interesting to note that not too many years ago, this same 24 acres would have been considered a good day's spraying for the average hydraulic sprayer—even with a large boom. Air spraying offers another distinctive advantage in that it eliminates the necessity of adapting the boom to specific row widths for a given crop.

Another outstanding advantage of the air sprayer is that by eliminating the unwieldy boom, you eliminate the problems of coping with uneven terrain and obstacles such as trees and fences, and transporting the sprayer through gateways, etc.

Complete, Even Coverage

Perhaps the outstanding problem of row crop air spraying is that of properly controlling the chemical-laden air throughout the entire width of swath so as not to damage plants close to the sprayer, keep the plants standing upright, and make the chemical-laden air circulate throughout all parts of the plants.

To accomplish this, an air outlet was designed to allow the largest volume of air to be discharged through the upper portion in order to reach the outer end of the swath and still allow enough air to be dis-

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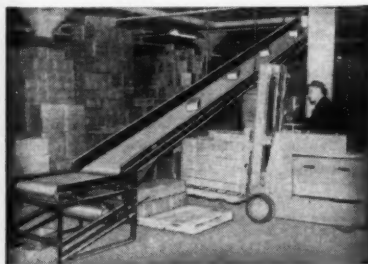
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charged from the lower outlet to get even distribution of the spray material to plants close to the sprayer and to the middle of the swath—in other words, complete and even coverage throughout.

Engineers also found that it was necessary to move out the "dead air" trapped within and under the plant, so that it could be replaced with chemical-laden air. In addition to a properly designed air outlet, the proper air volume and air velocity had to be employed. Air volume ranges from 12,000 to 31,000 cubic feet per minute, and air velocity from 70 to 100 miles per hour in the modern air sprayer. Like the older boom-type sprayers, air volume—like pump capacity—largely determines the "rate of work" which can be obtained from the sprayer.

Wind No Problem

Another outstanding feature of the modern air sprayer is its horizontal rotation. The discharge head can be rotated horizontally so that spray can be delivered at virtually any desired angle from the line of travel through the field. This allows the operator to take full advantage of wind conditions and spray from either the right or the left side.

For example, while spraying tomatoes in central Indiana on a windy day, it was possible to increase swath width considerably while spraying against the wind by merely "quartering" the direction of the air stream directly into the wind instead of at an exact right angle to the direction of the sprayer's ground travel. Many experiences similar to this have proved the desirability of horizontal rotation of the discharge head.

The first logical step taken by manufacturers of spray equipment was the introduction of the air attachment to replace the boom on existing row crop sprayers. Many growers have good, serviceable high-pressure equipment, and the air attachment keeps their investment at a minimum. The attachment has been accepted by many leading growers, and it is apparent that row crop air spraying will soon be used as universally as air spraying in commercial fruit growing.

Actually, it has taken approximately 15 years to develop orchard sprayers to the point where approximately 85% of all orchards in the nation, 20 acres or more in size, now use air sprayers. It is apparent that universal acceptance of row crop air spraying will be accomplished in much less time.

The advantages add up to a savings of some 50 to 75% in labor and 25 to 35% in the over-all cost of spraying.

THE END.



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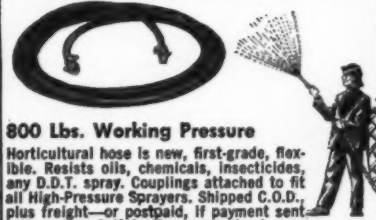
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Vegetable growers in Ohio are enthusiastic about a new transplanter. The new machine has been field-tested and has many long-needed advantages. Growers report that plants set are about 98% perfect with the machine. By following the contour of the ground, even furrow depth and uniform sets are assured. Adjustable pack wheels give a tight soil seal, removing air from around the roots. The furrow depth is regulated by a handy depth control lever, and a self-cleaning water valve insures the



proper amount of water to each transplant. This new machine will save you money and increase yields. Get the facts—write New Idea Farm Equipment Co., Dept. 2067, Coldwater, Ohio.

Be sure to mention **AMERICAN VEGETABLE GROWER** when writing manufacturers.

Your Money Back

Middle West potato growers have increased their potato yields by using a new product called ActivO. This new product is applied to the seed and immediately reacts on the soil and seed, developing in the soil billions of organisms so necessary to top production. Several growers tell me ActivO works better than fertilizer. The manufacturer says he will give our readers their money back if ActivO doesn't produce more and better potatoes. Why not try this new product; a trial package enough for 9 to 18 bushels costs only \$2.95. Write Bill Benson, ActivO Process, Inc., Bridgeton, Ind.

MAY, 1957



SINOX PE, in pre-emergence application, is highly selective. It singles out and halts *weed* growth in: BEANS AND SWEET CORN, PEAS AND POTATOES.

SINOX PE "polices" the area, eliminates the destructive weeds and conserves all available plant food elements and moisture for the crop itself.

SINOX PE does a big labor/dollar-saving job for you and works 'round the clock — not any eight hour shifts! SINOX PE works *while you sleep!* Remember — good weed control is good farm economics . . .

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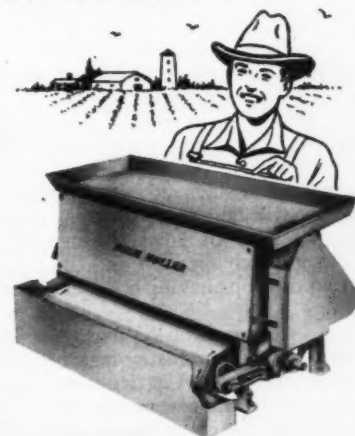
TO HULL PEAS, LIMA BEANS, ETC.

USE A

DIXIE HULLER

You lose money when you hull English peas, lima beans, field peas, etc. by hand. You can avoid this loss by using the Dixie "Pea and Bean Huller," which does the job mechanically. It hulls a bushel every few minutes.

Hundreds of growers are now saving time and money by using the Dixie Huller. Why let tedious hand labor slow up production, increase your costs and reduce your profits when the Dixie Huller performs so satisfactorily? Write for descriptive circular, which gives full details, prices, etc.



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Challenges of a Competitive Industry

TODAY the annual investment in research by industry, government, and other agencies in the United States is larger than their total investment in research prior to 1930. The phenomenal changes that are taking place in many aspects of the vegetable industry are in large part a result of research, expanded industrial activity, and a rapidly rising population that is able to support the highest standard of living in history.

In 1956 the average acre yield of potatoes in the United States was 290 bushels. Ten years ago it was 193, and 20 years ago only 117! The postwar increase in the efficiency of potato production is greater than that of any other industry, and has resulted in an acreage reduction of over 50%. Unfortunately, this efficient production has resulted in surpluses that frequently have made potato production unprofitable.

This year the average acre yield of tomatoes for canning was more than twice that of 10 years ago. On 200,000 fewer acres than in 1946, over 1 million more tons were produced. In many other processing crops, the 1956 yield per acre was more than 30% higher than 10 years ago. Productivity of lima beans and snap beans increased 56%; that of cucumbers for pickling and spinach, 48%; and of sweet corn, 35%.

To attain these increases, processing crops and potatoes have been shifted to and concentrated in areas having climatic patterns that favor their production, grown on soils of high productivity, with proven cultural practices and using high-quality seed of adapted varieties.

We think that in spite of surpluses which an expanding population will not eliminate in the near future, one of the chief problems of the vegetable industry will be to increase the efficiency per hour of labor through advances in mechanization and the production of crops having a larger value per acre.

The mechanization of most phases of the vegetable industry lags behind industry and most of agriculture. Advances and improvements in the mechanization of seeding or planting, pest control, and particularly of harvesting operations are challenges that will have to be met in the future.

In seeding, machinery that spaces seed more accurately and uniformly

when operating at high speed is required to reduce labor costs in thinning operations and insure more satisfactory stands.

Machinery that applies fertilizer or pest control chemicals more uniformly and effectively will be required to improve efficiency in these operations and is a challenge to the farm machinery industry.

Mechanization of green bean, tomato, and cucumber harvesting operations with minimum damage to the vines or the quality of the crop will soon be required to solve harvest labor problems with these and many other crops.

Increased mechanization means larger capitalization, necessitating larger operational units per grower or joint use by co-operating growers. Mechanization is only one important means of increasing efficiency, and must be combined with increasing productivity if maximum efficiency is to result.

The productivity of a crop depends on four major factors: its genetic inheritance, the climate under which it is grown, the ability of the soil to meet its nutrient and water requirements, and finally, satisfactory protection against weed, insect, and disease pests. We feel that plant breeders have a challenge in developing varieties that are resistant to an increasing number of diseases, particularly viruses that tend to become established in any area over a period of time. Development of varieties that are particularly adapted to the climatic pattern under which, and the

soil on, which, they are to be grown will step up productivity.

Growers in the future must insist on and be ready to pay for seed that is properly grown, carefully harvested, free of disease, well-graded, and true to type. Only high-quality, well-adapted seed is really cheap; cheap seed may be very expensive.

Growers in the future will be increasingly challenged to try to fit new crops or new varieties to their particular climate. The effects of low and high temperatures and the hazards of frost and drought will have to be

QUOTE-OF-THE-MONTH

"One is never in such intimate contact with plants as in a greenhouse."

—Liberty Hyde Bailey

evaluated in terms of the varieties or crops that will withstand them or to minimize them.

Soil and water conservation will become more necessary with the higher productivity of the future, particularly with continued cropping. With a growing lack of new areas for horizontal expansion of acreage, more emphasis in the future will be placed on vertical expansion into the second and third foot to increase production efficiency. Many practices that promote deeper rooting and improve soil structure in the second foot will help increase productivity at minimum expense. Where irrigation is not feasible or economical, promoting increased root development in the subsoil will aid in overcoming drought and help insure better quality. Organic matter from heavily fertilized green manure or cover crops will do much to promote granulation and maintain a favorable nutrient supply in the soil during the growth of the vegetable crop.

We forecast that a better husbandry will be required in the future to remain competitive.

Coming Next Month

Irrigation Issue

- How to Cultivate to Increase Yields
- Irrigation Boosts Potato Yields
- Overcoming Greenhouse Watering Problems
- Grower Experiences with Sprinklers in Texas
- Irrigating Root Crops in New England
- Closer Spacing Makes More Melons per Acre
- Learn about the Root Systems of Your Plants

VEGETABLE CONVENTION



"I'd like a room with a bath."

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"FINEST IN FARM MACHINERY"



Spra-Blast with 400-gallon Oliver PTO Sprayer. Two side units and boom under unit can be controlled independently.

How Spra-Blast cuts spraying costs and boosts produce quality and yield

- ☆ **Spraying time, refueling time cut $\frac{2}{3}$**
- ☆ **Uses less water and reduces wheel damage**
- ☆ **Complete pest control with uniform coverage**
- ☆ **Low upkeep with smooth-running fan, 36 h.p. engine**
- ☆ **Fast, accurate handling saves time**

Here's a triple boost for vegetable profits. New concentrate sprays require only about one-third as much water, one-third as much refilling time, one-third as much tramping of the field, one-third as much wheel damage—that means better produce quality, bigger yields and bigger profits.

You get top-notch pest control, too. Big air blast fan distributes spray material to every leaf and stem surface in a 50- to 60-foot swath. Modern aerodynamic design assures uniform air blast and spray coverage to every row...no stripping of foliage on the close rows, no skimpy coverage for the outside rows.

And you're sure of year-in and year-out dependability. Extra power in easy-to-start 36 h.p. air-cooled engine. Rubber-set fan hub reduces vibration and wear. Iron Age high-pressure pump delivers uniform gallonage under wide pressure ranges. Short coupled frame makes turning easier, more accurate.

See your Oliver Dealer and see how Spra-Blast can cut spraying costs and boost produce profits for you—either as a complete Iron Age unit or as an attachment for your present sprayer.

The Oliver Corporation,
400 West Madison St., Chicago 6, Illinois





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